Getting Started with Microsoft Windows

Microsoft® WINDOWS™

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Microsoft® Windows™

Version 3.1

Getting Started with Microsoft Windows

For the Microsoft Windows Operating System

Microsoft Corporation

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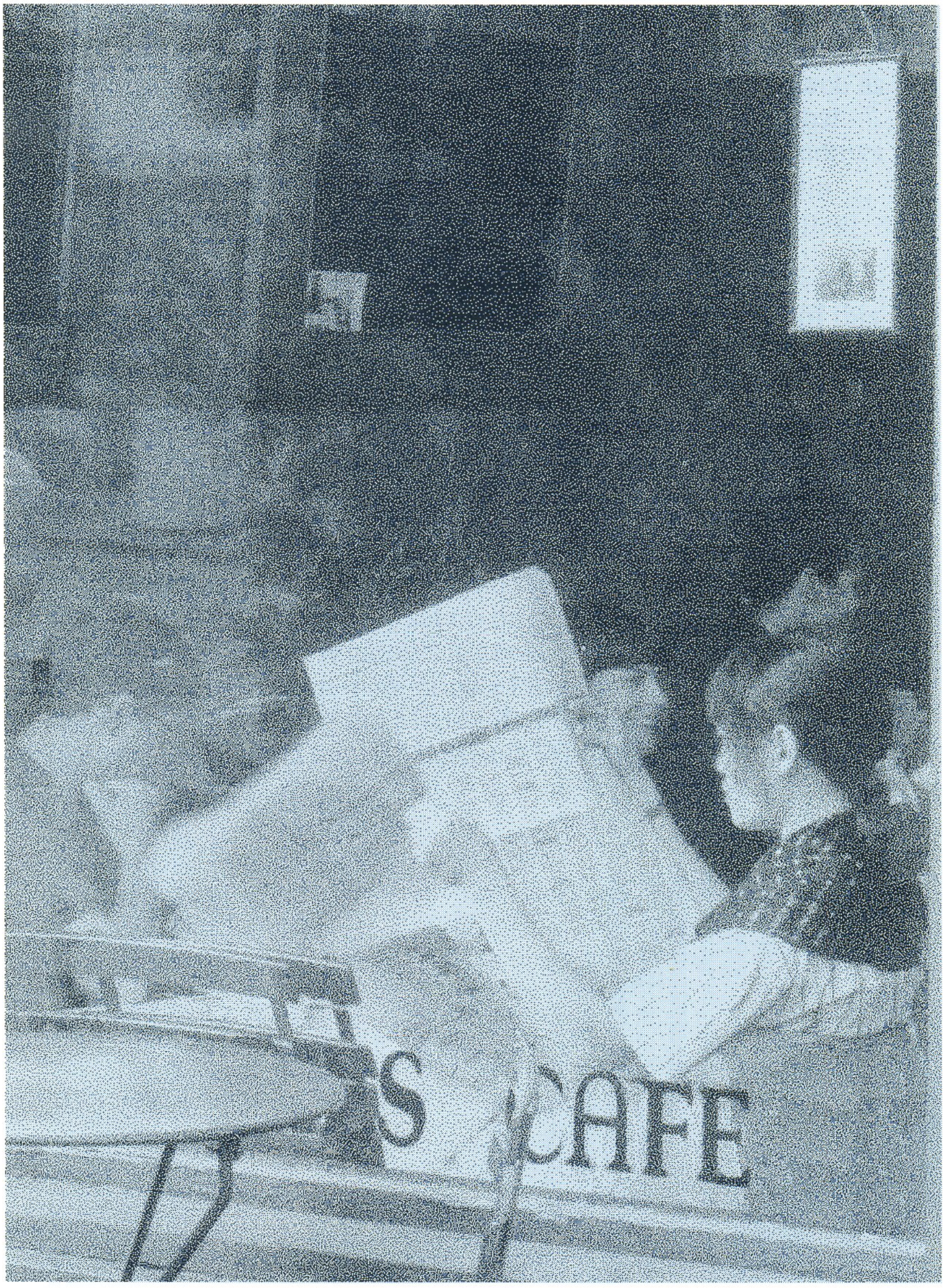
Welcome to Windows



Welcome

Welcome to the Microsoft® Windows™ operating system, software that makes your computer easier and more fun to use. Windows is easy to learn because its graphical interface is consistent from one application to the next. When you've learned to use one application, such as Windows Write, you've learned the essentials for using any other application with Windows. You can run your existing non-Windows applications beside Windows applications and share information between them. And now, Windows is easier and faster to set up on your system.

If you are new to Windows, you may want to go to Chapter 3 of this book right after setting up Windows. Chapter 3, "A Brief Tour of Microsoft Windows," offers a visual introduction to Windows so that you can become familiar with the graphical interface before you start to use it.

If you prefer to preview Windows on the screen, you can use the Microsoft Windows Tutorial during the Setup program. To use the Windows Tutorial, you must have a mouse and a VGA (or better) monitor. If Windows is already set up on your computer, you can start the Tutorial from within Windows. Choose the Windows Tutorial command from the Help menu in Windows Program Manager. For more information, see "Running the Microsoft Windows Tutorial" at the end of Chapter 3, "A Brief Tour of Microsoft Windows."

About This Book

Getting Started with Microsoft Windows is a setup guide and introduction to Microsoft Windows version 3.1.

This book is intended only as an introduction. For complete information about specific tasks, or for a more in-depth discussion of any Windows topic, see the *Microsoft Windows User's Guide.*

This book is arranged as follows:

- "Welcome"

  An overview of this book and the other Windows documentation, a list of system requirements, and information about registering your copy of Windows.

- Chapter 1, "Setting Up Windows"

  Instructions for setting up Windows, tips for previous Windows users on upgrading to Windows version 3.1, instructions for setting up Windows using a network, and options for starting Windows (for advanced users).

- Chapter 2, "New in This Version"

  A summary of the new and enhanced features in Windows version 3.1.

- Chapter 3, "A Brief Tour of Microsoft Windows"

  A look at Windows, introducing the basic concepts, some essential Windows techniques, and the main applications included with Windows.

- Chapter 4, "Troubleshooting"

  This chapter deals with questions you might have when setting up and using Windows, and suggests possible solutions.

What You Need to Run Windows

Windows version 3.1 works with most personal computers available today. One of the pieces in your Windows package is a Hardware Compatibility List, describing equipment that has passed Windows compatibility testing. All hardware on the list, and any hardware that is 100-percent compatible with hardware on the list, should work with Windows version 3.1. If you intend to use hardware that is not on this list, ask the equipment manufacturer about any special software you might need before you can use the hardware with Windows version 3.1.

The minimum software and hardware requirements your computer system needs to run Windows successfully are shown in the following list. If you need to verify that your display adapter, mouse, or other hardware is supported by Windows, see the Hardware Compatibility List.

Note The disks in your Windows package are high-density disks. If you plan to set up Windows from a low-density drive, you can order disks by using the order form at the back of this book.

Windows requires:

- Microsoft MS-DOS® version 3.1 or later. (To check your version, type **ver** at the MS-DOS prompt.)
- For *386 enhanced mode,* a personal computer with an 80386 processor (or higher) and 640 kilobytes (K) of conventional memory plus 1024K of extended memory, 8 megabytes (MB) of free disk space (10.0 is recommended), and at least one floppy disk drive.

  For *standard mode,* a personal computer with an 80286 processor (or higher) and 640K of conventional memory plus 256K of extended memory, 6.0 MB of free disk space (9 MB is recommended), and at least one floppy disk drive.

  Note Minimum disk-space requirements assume no optional components, network, or printers. Recommended requirements include all components installed, including a network and printer.

- A display adapter that is supported by Windows.
- A printer that is supported by Windows, if you want to print with Windows.

- A Hayes, Multi-Tech, Trail Blazer, or compatible modem, if you want to use Terminal, the Windows communications application.
- A mouse that is supported by Windows. Though it is not required, a mouse is highly recommended so that you can take full advantage of the easy-to-use Windows graphical interface.

Note To get the best performance from Windows, you should configure memory above 640K as extended memory. Memory is discussed in Chapter 14, "Optimizing Windows," in the *Microsoft Windows User's Guide.*

Windows runs in one of two operating modes, standard or 386 enhanced, depending on your hardware configuration. For information about starting Windows in a specific mode, see Chapter 1, "Setting Up Windows," in this book. For a definition of each mode, see Chapter 1, "Windows Basics," and the Glossary in the *Microsoft Windows User's Guide.*

Registering Your Copy of Windows

Please take a moment to fill out and mail the registration card you received with Windows. Registering Windows entitles you to the following additional benefits:

- Automatic notification of upgrades or revisions to Windows. By receiving timely notices directly from Microsoft, you'll be among the first to know about upgrades.
- Automatic notification when new Windows-related products are released. You'll receive up-to-date information about new Windows applications as soon as they become available.

About Your Windows Documentation

In addition to this book, the Windows version 3.1 documentation set consists of the *Microsoft Windows User's Guide,* an online Tutorial, an extensive online Help system, and several online documents (formatted for use with Windows Write) that are copied to your hard disk when you set up Windows.

The way you like to learn and how much you already know about Windows and about computers will determine how you use the different pieces of the documentation.

The following list outlines the various pieces of the Windows documentation:

- *Getting Started with Microsoft Windows* (this book) is a guide to setting up Windows on your system, and a brief introduction to Windows.
- The *Microsoft Windows User's Guide* provides a comprehensive description of Windows and the ways you can work with it. It includes explanations and procedures for first-time users, in addition to topics for advanced users.
- The Microsoft Windows Tutorial provides online instructions for using a mouse and for performing some basic tasks in Windows.
- Online Help provides a quick reference to procedures and commands you need when using Windows. *Context-sensitive* Help is now available in the main Windows applications—to obtain specific information about how to complete a dialog box, just press F1 or choose the Help button while using the dialog box.
- Several online documents are copied to your hard disk when you set up Windows. You can read (and print) the files by using Windows Write. These files include:
  - SETUP.TXT—Information specific to setting up Windows. Contains information about software and hardware configurations that require special handling to successfully set up and start Windows. (This file can be viewed by using any text editor.)
  - README.WRI—Information updated after the user's guide was printed.
  - PRINTERS.WRI—Information about configuring particular printers and fonts for the Windows environment.
  - NETWORKS.WRI—Information about operating Windows with specific network configurations.
  - SYSINI.WRI—Procedures for modifying settings in the SYSTEM.INI file (for advanced users only).
  - WININI.WRI—Procedures for modifying settings in the WIN.INI file (for advanced users only).

Conventions

To help you locate and interpret information easily, *Getting Started with Microsoft Windows* uses consistent visual cues and a few standard text formats. These conventions are explained as follows.

Visual Cues You will find the following typographic conventions throughout this guide.

This	Represents
bold	Anything that you must type exactly as it appears. For example, if you are asked to type **dir \windows**, you would type all the bold characters exactly as they are printed.
italic	Placeholders for information you must provide. For example, if you are asked to type *filename*, you would type the actual name for a file instead of the word shown in italic type. Italic type also signals a new term. An explanation immediately follows the italicized term.
ALL CAPITALS	Directory names, filenames, and acronyms.
386	Information that is specific to running Windows in 386 enhanced mode.

Keyboard Formats Key combinations and key sequences appear in the following formats.

Format	Meaning
KEY1+KEY2	A plus sign (+) between key names means to press and hold down the first key while you press the second key. For example, "press ALT+ESC" means to press and hold down the ALT key and press the ESC key. Then release both keys.
KEY1, KEY2	A comma (,) between key names means to press and release the keys one after the other. For example, "press ALT, F" means to press and release the ALT key, and then press and release the F key.

Setting Up Windows

Chapter 1

Setup Designed with Users in Mind

Setting up the Microsoft Windows version 3.1 operating system on your computer is simple. You can choose between two methods: Express Setup and Custom Setup.

Express Setup

Express Setup is the method recommended for most users.

When you use Express Setup, the Setup program identifies your hardware and software, configures Windows to run with your system, and updates necessary files. All you do is type your name, answer a few simple questions (such as what type of printer you have), and insert disks when requested.

If you have applications already on your system, Express Setup sets them up so that you can easily use them with Windows. (Setup may be unable to set up some less common applications. You can set these up later from within Windows. Also, if you want to make changes to your system after Windows has been set up, you can do so by running Windows Setup from within Windows.)

Note If your system does not have enough disk space to set up all of Windows, Express Setup proposes a partial setup, which excludes some or all of the Windows optional components (for example, screen savers and additional accessory applications).

To set up Windows by using Express Setup, you need to know two things:

- What type of printer you have, if any
- Which port your printer is connected to

Note Most computers are equipped with one or more parallel ports, such as LPT1, and one or more serial ports, such as COM1. You can use these ports to connect your computer to external devices, such as a printer.

A *physical* port is a socket located on the front or back of your computer, into which you plug a mouse, printer, or other hardware. A *virtual* port is an internal connection, defined by the software, such as your system connection to a network printer. Your system may have one or both types of ports. See your hardware manual for information about the ports on your system.

Express Setup sets up Windows in the C:\WINDOWS directory. If you are updating from Windows version 3.0, Express Setup asks you for a directory name, giving your previous Windows directory as the default choice.

Custom Setup

Custom Setup is for experienced computer users who want to alter the standard Windows configuration. For example, if you want to control how your CONFIG.SYS and AUTOEXEC.BAT files are modified, you should use this method.

If you have limited space on your hard disk, you can use Custom Setup to choose which optional Windows components (or individual files within a component) you want to set up.

During Custom Setup, you are prompted to verify and provide information about the following:

- The directory where you want to store Windows files
- The type of computer you are using
- Your display (monitor) type
- Your mouse, if you are using one
- Your keyboard and keyboard layout

- The language you will work in
- The network you are on, if any
- The printer and printer port you use, if any
- Applications on your hard disk that you want to run with Windows
- Changes to your AUTOEXEC.BAT and CONFIG.SYS files, if necessary
- Which optional Windows components to install (including the Windows Tutorial)
- Your virtual-memory settings (when running Windows in 386 enhanced mode)

Running Setup

Setup detects minimum system requirements (listed in "Welcome") and warns you if your system does not meet the requirements. Also, Setup notifies you if it detects system features that are incompatible with Setup or Windows.

Caution Before running Setup, be sure to turn off any automatic message service, such as a network popup or a printing notification, that prints directly to your screen. These are incompatible with Setup.

▶ To set up Windows

1. Insert the Windows version 3.1 disk 1 in the drive, and close the drive door.
2. At the MS-DOS prompt, type the drive letter of the drive you're using, followed by a colon (**:**), and then press ENTER.

   For example, the command line might look like this:

   ```
   C> a:
   ```

3. Type **setup**, and then press ENTER.
4. Follow the instructions on the screen.

   You can choose Express Setup or Custom Setup. It is recommended that you use Express Setup; however, you can use Custom Setup if you want. Both methods are described earlier in this chapter.

Windows Tutorial

You can choose to go through the brief, online Microsoft Windows Tutorial as part of the Setup program. The first Tutorial lesson guides you through basic mouse techniques and gives you a chance to practice them before you start working with Windows. The second lesson introduces you to basic Windows techniques.

If you choose not to take the Tutorial from within the Setup program, you can run it later from within Windows by choosing the Windows Tutorial command from the Help menu in Windows Program Manager. For complete instructions, see "Running the Microsoft Windows Tutorial" at the end of Chapter 3, "A Brief Tour of Microsoft Windows."

Upgrading from Windows Version 3.0

Although you can keep your existing Windows version 3.0 in a separate directory, it is strongly recommended that you upgrade your copy of Windows version 3.0. You can then take full advantage of the many new features and enhancements in Windows version 3.1. First, be sure to make backup copies of any data files and programs you have added to your system.

If you have Windows version 3.0, upgrading to Windows version 3.1 preserves existing Windows settings, such as groups you might have created or desktop settings you've chosen. Also, applications, fonts, and certain drivers are preserved. Only the Windows system files, upgraded device drivers, and accessories are replaced with the new versions.

Upgrading does the following:

- **Maintains existing Program Manager groups**

  If you have created new groups in Program Manager or added program-item icons to existing groups, Setup preserves those new groups or additions.

- **Preserves existing system-information settings**

  Upgrading preserves settings for your computer, display (monitor), mouse, keyboard and keyboard layout, language, network, and the associated drivers.

- **Updates existing device drivers that were supplied with Windows version 3.0**

  If you have a Windows version 3.0 driver installed for which there is an available updated version, Setup installs the updated driver.

- **Maintains all installed drivers that were not supplied with Windows**

  If you have a device driver installed that was supplied by another manufacturer, Setup leaves the driver unchanged. In some cases, Windows version 3.1 has a new driver that you can use in place of your existing driver. For example, if you have a Super VGA (video graphics adapter), you may want to update to the Windows version 3.1 Super VGA driver by using Custom Setup or by running Setup from within Windows later.

- **Preserves settings relating to the use of your system's upper memory area**

  The order in which drivers are loaded is critical in optimizing the use of the upper memory area. Setup preserves the **loadhigh=** line and its placement in your AUTOEXEC.BAT file. Setup also preserves the **devicehigh=** line in your CONFIG.SYS file.

Note Although you are strongly advised against it, you can keep your existing Windows version 3.0 and add version 3.1 in a separate directory. When Setup asks if you want to upgrade, specify a new directory for Windows version 3.1. Version 3.1 will not incorporate the custom settings you specified for version 3.0, such as new groups, colors, and desktop settings. After setting up Windows version 3.1, be sure to remove Windows version 3.0 from your PATH setting in your AUTOEXEC.BAT file. Some parts of Windows version 3.0 cause serious conflicts if run in Windows version 3.1.

More Information About Upgrading

If you are upgrading, please note the following information:

- If you are using an English version of Windows version 3.1 to upgrade a non-English version of Windows version 3.0, Setup will upgrade all the necessary Windows device drivers, using the English driver names.

  However, some of your installed device drivers that were not originally supplied with Windows may not be upgraded. After setup, you may need to obtain new third-party drivers (such as those supplied

by hardware manufacturers) and update them by running Setup from within Windows or from the MS-DOS prompt. For more information, see Chapter 15, "Maintaining Windows with Setup," in the *Microsoft Windows User's Guide.*

- In addition to device drivers supplied with Windows version 3.1, Microsoft also provides the Windows Driver Library (WDL), which contains device drivers made available after Windows version 3.1 was released. Device drivers are added to the WDL as they become available. If you have a modem, you can download WDL device drivers from network services including CompuServe, GEnie, Microsoft OnLine, various user-group bulletin-board services (BBSs on the APCUG network), and the electronic downloading service maintained by Microsoft (phone 206-637-9009). Users who do not have a modem may purchase disks by calling Microsoft Customer Support Services at 1-800-426-9400.

Note If your copy of Windows was acquired outside the United States, the package contains a subsidiary information card listing bulletin-board services (BBSs) from which you can obtain updated device drivers. The card also lists local subsidiary telephone numbers you can call to obtain drivers if no BBS is available or you cannot access a BBS.

Network Setup

The Setup program has options that can be used to place Windows files on a network server or set up Windows for an individual network user to run. This section describes both procedures.

Setting Up Windows over a Network

If a network system administrator has put the Microsoft Windows files on a network server, you can set up Windows on your system from the network. Check with your system administrator for any special instructions before setting up Windows over a network.

Note For information about copying Windows files to a network server, see the next section, "Placing Windows Files on a Network Server."

Windows can be set up from a network in three ways:

- **All Windows files are copied to your computer.**

  In this situation, you create your own copy of Windows on your system. All Windows files are copied to your hard disk.

  To set up Windows, you connect to the network server and type **setup** (do not use the **/n** network option). Follow the instructions on the screen. It is recommended that you use Express Setup; however, you can use Custom Setup. Both methods are described earlier in this chapter.

- **Personal Windows files are copied to your computer; shared Windows files are located on the server.**

  You can set up your system to access a *shared* copy of Windows. In this case, most Windows files are located on a network server and are shared by you and other users. During Setup, a few Windows files are copied to your personal Windows directory on your hard disk. By maintaining your own copies of these files, you can customize Windows according to your preferences.

  To set up Windows this way, use the **setup /n** option, described in the procedure following this list.

- **No Windows files are copied to your computer.**

  If your machine is a *diskless workstation* (that is, it does not have a hard disk), no files can be copied to your system. When running Windows, you use shared Windows files located in a network Windows directory. During Setup, a few Windows files are copied to your personal Windows directory on the server hard disk and modified for your use.

  To set up Windows this way, use **setup /n**, described in the following procedure. When Setup asks you where it should put your Windows files, specify the name of your personal Windows directory, located on the server hard disk. If you are not sure which network directory you should use as your personal Windows directory, ask your network system administrator.

▶ To set up a personal copy of Windows from a shared network directory

1. Connect to the network.
2. Change to the directory where Windows is located on the network (for example, W:\WINSHARE).
3. At the MS-DOS prompt, type **setup /n**
4. Follow the instructions on the screen.

   It is recommended that you use Express Setup; however, you can use Custom Setup if you want. Both methods are described earlier in this chapter.

   Setup will ask where it should put your Windows files. Type the path of your personal Windows directory—for example, **c:\windows** (or **u:\winuser**, for a diskless workstation).

Note If you have a set of Windows disks, do not attempt to set up a network copy of Windows from the disks (by typing **setup /n**). You can run **setup /n** only if you are setting up Windows from a network server.

If you are using an English version of Windows version 3.1 to upgrade a non-English version of Windows version 3.0, you need to use Custom Setup. In the System Information screen, choose the English names of drivers you previously installed in your non-English version of Windows.

In addition, some of your installed device drivers that were not originally supplied with Windows might not be upgraded. After setup, you may need to obtain new third-party drivers (such as those supplied by hardware manufacturers) and update them by running Setup from within Windows.

Placing Windows Files on a Network Server

Windows has an administrative setup option you can use to place Windows files on a network server. The administrative option does not set up a usable copy of Windows that you can run, but transfers the files from the Windows Setup disks to a network drive. The files are expanded, renamed, and marked as read-only when they are copied to the network drive. After the Windows files are copied to a directory on the network, users may connect to this directory and run the Setup program to set up Windows for their own workstations.

▶ To place Windows files on a network server

1. Insert the Windows version 3.1 disk 1 in a drive.
2. At the MS-DOS prompt, type the drive letter of the drive.
3. Type **setup /a**
4. Follow the instructions on your screen.

   Setup prompts you to specify the network drive and directory to which you want the Windows files copied. You're also prompted to specify group registration information (group name and company name), which is stored and used when individual workstations are set up.

Windows requires the following disk space for network files:

- Shared network directory — 16 MB
- Personal network directory — 300K

Setup Facts

You do not need the information in this section to set up Windows, but you may be interested in the following facts about Windows and the Setup program.

Disk Space and Setup Time Required by Windows

Setting up Windows requires different amounts of space on your hard disk, depending on your system.

The following are the requirements for a typical 80386 system.

Setup type	Minimum space	Maximum space
New	8.0 MB	10.0 MB
Upgrade	5.0 MB	5.5 MB

The following are the requirements for a typical 80286 system.

Setup type	Minimum space	Maximum space
New	6.0 MB	9.0 MB
Upgrade	5.0 MB	5.5 MB

Note Minimum disk-space requirements include no optional components, network, or printer. Maximum requirements include all components installed, including a printer and network.

Although setup time can vary, depending on the speed of your system and whether you use Express or Custom Setup, you should expect to spend no more than 20 to 30 minutes to set up Windows.

Setup Summary

The Windows Setup program:

- Determines what hardware you are using.
- Decompresses Windows files from the Windows disk set and copies the files to your hard disk.
- Configures SYSTEM.INI and WIN.INI (files that are used to customize your copy of Windows).
- Searches your hard disk for applications to set up for use with Windows, and creates program-item icons for these applications. You can then start an application simply by choosing its icon.

- Creates program information files (PIFs) and program-item icons for any known non-Windows applications you currently have on your system. PIFs supply Windows with essential information about how to run the applications with Windows.
- Modifies your AUTOEXEC.BAT and CONFIG.SYS files as described in the following section. (Express Setup does this automatically. During Custom Setup, you can choose whether or not to have Setup modify these files.)
- Restarts your system (if you want), so that all changes that were made to your system during Setup take effect immediately.

Note If you quit Setup before Windows has been completely set up (by pressing F3, for example), Windows will not be properly set up on your system. You will need to run Setup again before you can use Windows.

Changes to the AUTOEXEC.BAT and CONFIG.SYS Files

Setup makes the following changes to your AUTOEXEC.BAT file:

- Adds to your PATH setting the directory where you are setting up Windows.
- Adds the SMARTDRV.EXE command line, if appropriate for your system configuration.
- Creates a TEMP directory in the Windows directory and sets the TEMP variable to it (if you have not already set the variable).

Setup makes the following changes to your CONFIG.SYS file:

- Adds the HIMEM.SYS line. For example:

```
device=c:\windows\himem.sys
```

- Adds the SMARTDRV.EXE /double_buffer line, if needed. For example:

```
device=c:\windows\smartdrv.exe /double_buffer
```

- Updates RAMDRIVE.SYS, if it is in use.
- Updates EMM386.EXE, if appropriate.
- Updates your Microsoft or Hewlett-Packard mouse driver.
- Deletes any incompatible device drivers.

- Adds or updates your EGA.SYS device driver if you are using an enhanced graphics adapter (EGA) or a Mouse Systems mouse.
- Adds the appropriate parameter to the 386MAX line, if it is present.

Note If you have problems setting up Windows, see Chapter 4, "Troubleshooting."

Starting Windows

At the end of the Setup program, you can choose whether to restart Windows or return to the MS-DOS prompt. You can start Windows from the MS-DOS prompt at any time.

▶ To start Windows from the MS-DOS prompt

- Type **win**, and then press ENTER.

Note To have Windows start automatically when you turn on your computer, add the line **win** at the end of your AUTOEXEC.BAT file. For more information about AUTOEXEC.BAT, see your MS-DOS documentation.

The Windows Command Line

The text you type at the MS-DOS prompt is called the *command line*. To start Windows and use the default mode (either 386 enhanced or standard), you can use the **win** command. However, you might want to start Windows in a particular mode, or have a particular application start when Windows starts. This section describes how to use two types of Windows startup methods: options and run commands.

The Windows command line tells your computer:

- To start Windows.
- What mode to start Windows in (optional).
- The application or command that you want Windows to run when it starts (optional).

The Windows command line has the following form:

win [*options*] [*runcommand*]

The **win** portion of the command line instructs MS-DOS to start Windows. You must include the **win** portion of the command line; the rest of the command line is optional.

The *options* portion of the Windows command line represents options that specify which mode to run Windows in. For more information, see "Starting Windows in a Specific Mode" later in this chapter.

The *runcommand* portion of the Windows command line represents text that you can include to start an application when you start Windows. For more information, see "Specifying a Run Command" later in this chapter.

Windows Modes

Windows can run in two modes: standard mode and 386 enhanced mode. When you type **win**, Windows responds to your system's configuration by starting in the most appropriate mode for your system. (When Windows is running, you can find out which mode Windows is running in by choosing the About command from the Help menu in Program Manager or in applications in the Main or Accessories group.)

Windows uses the following criteria when determining which mode to use:

- Windows runs in 386 enhanced mode if you have an 80386 computer (or higher) with at least 640K of conventional memory plus 1024K of extended memory.
- Windows runs in standard mode if you have an 80286 computer (or higher) with at least 640K of conventional memory plus 256K of extended memory. Windows also runs in standard mode with 80386 computers that have less than 2 MB of memory.

Starting Windows in a Specific Mode

At times you might want to run Windows in a specific mode, even if it is not the most efficient one for your system. For example, if your system is a 80386 computer with between 2 and 3 MB of memory and you do not want to run non-Windows applications in Windows, you may decide to run Windows version 3.1 in standard mode to speed up performance. For more information about improving performance, see Chapter 14, "Optimizing Windows," in the *Microsoft Windows User's Guide*.

To ensure that Windows runs in a particular mode, include the option for that mode on the Windows command line when you start Windows. For example, to start Windows in standard mode, type **win /s**.

You can specify one of the following options.

Use	To
/s	Run Windows in standard mode. You might want to use this option if you have an 80386 computer with 640K conventional memory plus 1024K to 2096K extended memory and do not use non-Windows applications with Windows. On such systems, Windows runs faster in standard mode than in 386 enhanced mode. You might also want to use this option if you are having hardware compatibility problems when running in 386 enhanced mode.
/3	Run Windows in 386 enhanced mode. You can use this option if you want to run Windows in 386 enhanced mode even though your 80386 (or higher) computer has less than the 2 MB of memory that 386 enhanced mode normally requires. This option works only on 80386 systems with at least 1 MB of memory (640K conventional, 384K extended). If your system has less than 2 MB of memory, Windows probably runs slower in 386 enhanced mode than in standard mode. However, you may be able to run more Windows applications at once in enhanced mode.

Specifying a mode is optional. If you do not specify a mode, Windows starts in the mode most appropriate for your system.

Specifying a Run Command

You can use the *runcommand* portion of the Windows command line to run a particular application or command immediately after starting Windows. For example, the following command line starts Windows and then starts Microsoft Excel:

win c:\excel\excel.exe

The *runcommand* portion of the Windows command line is identical to the text you type after choosing the Run command from the File menu in Program Manager or Windows File Manager. For more information about the Run command, see Chapter 2, "Application Basics," in the *Microsoft Windows User's Guide*.

The *runcommand* text must follow any options you include on the Windows command line. For example, the following command line starts Windows in standard mode and then runs the application MYEDITOR.EXE:

win /s myeditor.exe

Note You can also set up one or more applications to run at startup by adding their program-item icons to the StartUp group in Program Manager. For more information, see Chapter 3, "Program Manager," in the *Microsoft Windows User's Guide*.

Some Sample Windows Command Lines

This section describes some command lines that illustrate the Windows startup methods.

Sample One: Starting Windows and an Application The following command line starts Windows and then runs the application TEXTEDIT.COM, which is in the EDITORS directory on drive D:

win d:\editors\textedit.com

Sample Two: Starting Windows and Opening a Document The following command line starts Windows in standard mode and then opens the document AGENDA.TXT in Windows Notepad:

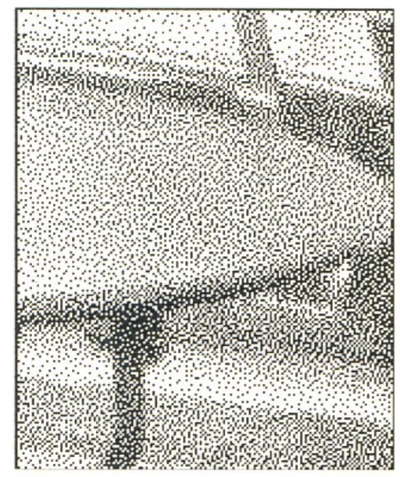
win /s agenda.txt

The command line runs Notepad because Windows associates all files that have the .TXT filename extension with Notepad. You can change such file associations in File Manager by choosing the Associate command from the File menu. For information, see Chapter 4, "File Manager," in the *Microsoft Windows User's Guide*.

Sample Three: Starting Windows and an Application, and Opening a Document The following command line starts Windows, runs Microsoft Word, and then opens the Word document LETTER.DOC:

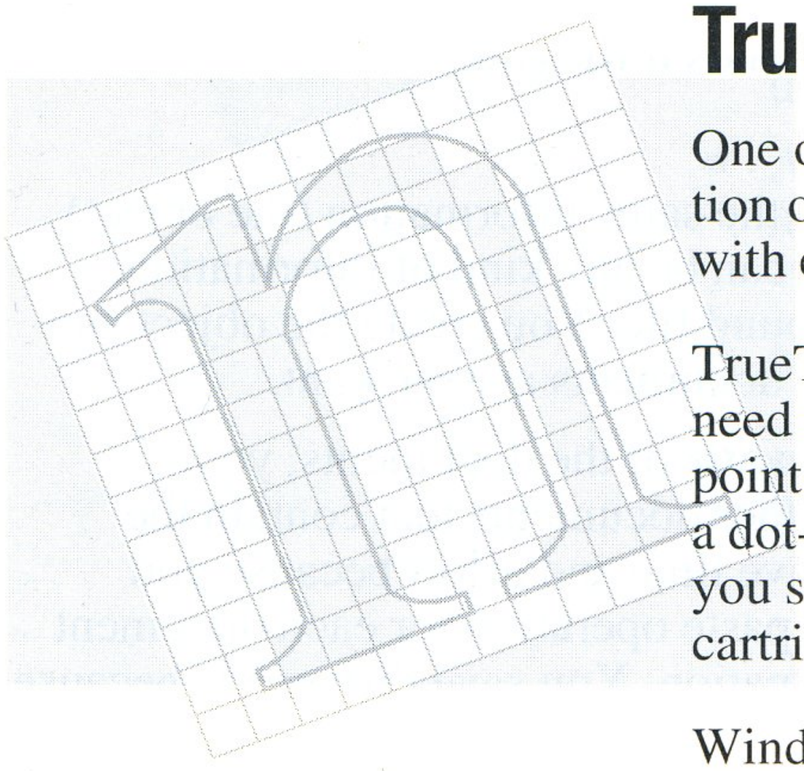
win c:\word\word.exe letter.doc

New in This Version



Chapter 2

This chapter highlights some of the new and enhanced features and many of the performance improvements in Windows version 3.1.



TrueType Fonts

One of the most dramatic features in Windows version 3.1 is the addition of TrueType fonts. TrueType provides you with a full set of fonts, with enough variety to meet virtually all your printing needs.

TrueType fonts are scalable, so you can choose the exact font size you need for your documents. For example, you can use the same font at 12 points for the main text of a report and at 16 points for topic heads. On a dot-matrix or laser printer, the page you print will appear exactly as you see it on the screen, without your having to obtain special screen, cartridge, or soft fonts.

Windows version 3.1 supplies several families of TrueType fonts, including Arial, Courier New, Symbol, and Times New Roman. You can easily add other TrueType fonts from a font manufacturer to enhance your Windows applications.

For more information about using TrueType fonts, see Chapter 5, "Control Panel," in the *Microsoft Windows User's Guide.*

Object Linking and Embedding

Object linking and embedding is now available in applications such as Microsoft Excel, Ami Professional, and WordPerfect, in addition to Windows Paintbrush, Write, Cardfile, and Sound Recorder. Object linking and embedding enables you to transfer and share information in a powerful new way.

- Object embedding

  With object embedding, you can create a drawing, sound file, or other object by using an application such as Paintbrush or Sound Recorder, and then insert (embed) it into another document. You can edit the embedded information from within your document.

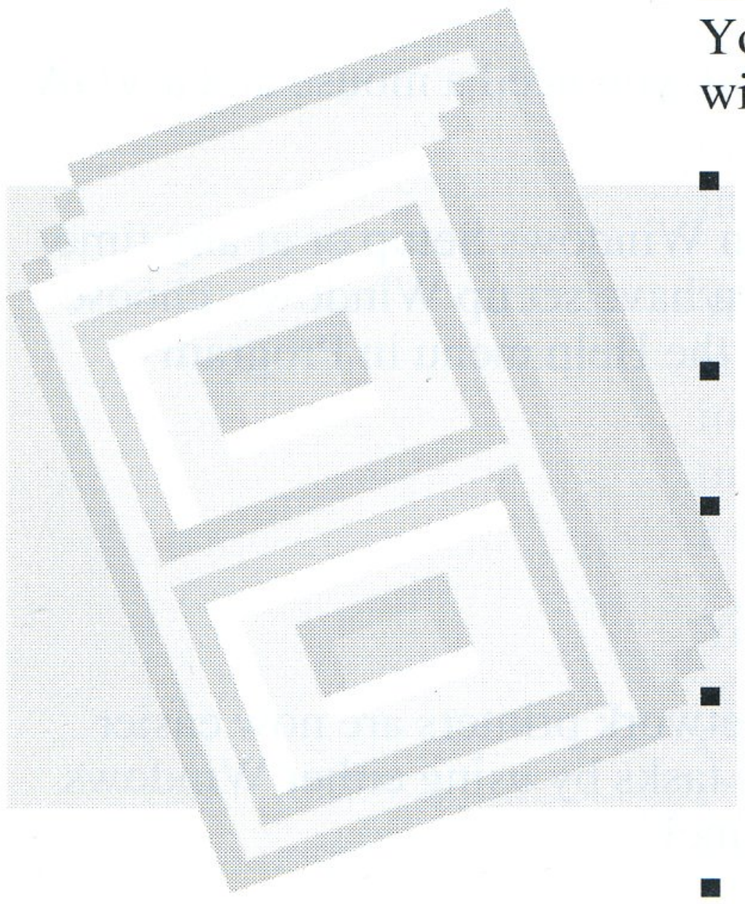
  For example, suppose you are working on a report in which you have embedded a drawing. To make changes to the drawing, you choose it; Paintbrush opens. You can then make changes to the drawing, save it, and return to your report. You don't have to remember where the drawing is: Windows finds it for you.

- Object linking

  With object linking, you can use the same information (the object) in several documents. An object can be any kind of information, including text, a drawing, or a sound file. You create the object and then connect (link) it to as many documents as you want.

  When you edit the information in any of the documents, your changes are reflected in all the other documents that contain the same linked information. You save time and effort because you don't have to perform a cut-and-paste operation for each document every time you change the information. You save disk space because only one copy of the information exists—the documents contain only the links.

For more information about object linking and embedding, see Chapter 13, "Integrating Your Windows Applications," in the *Microsoft Windows User's Guide*.



A New File Manager

Windows File Manager has a new look: a split window with a directory list on the left and the contents of the "open" directory on the right. You can browse the file system easily without having to open separate windows. File Manager has several other enhancements, including:

- The ability to display the contents of more than one drive or directory at once. This makes it easy to copy and move files and subdirectories from one directory or drive to another.
- More clearly labeled windows, disk drives, and network paths, making it easier to use File Manager.
- A variety of fonts you can use to display information in the File Manager window. This allows you to control how much file information is displayed in the File Manager window at a time.
- Enhanced network support that makes it easy to connect to and disconnect from network drives. (The specific menu commands that appear depend on the network you are using.)
- A Quick Format option so that you can format a floppy disk and then copy files to it without having to start MS-DOS Prompt or quit Windows.
- More information about disk-space usage and availability.

For more information about using File Manager, see Chapter 4, "File Manager," in the *Microsoft Windows User's Guide.*

Drag and Drop

The new "drag and drop" feature makes it easy to print, copy, or move a file in File Manager. You simply drag a file icon from one location to another by using the mouse. For example, you can print a file by dragging its file icon from File Manager and dropping it onto the minimized Print Manager window.

If you want to create a new program item to use to start an application, you can drag the application's file icon from File Manager and drop it onto a group icon or window in Windows Program Manager.

For more information about dragging and dropping files, see Chapter 4, "File Manager," in the *Microsoft Windows User's Guide.*

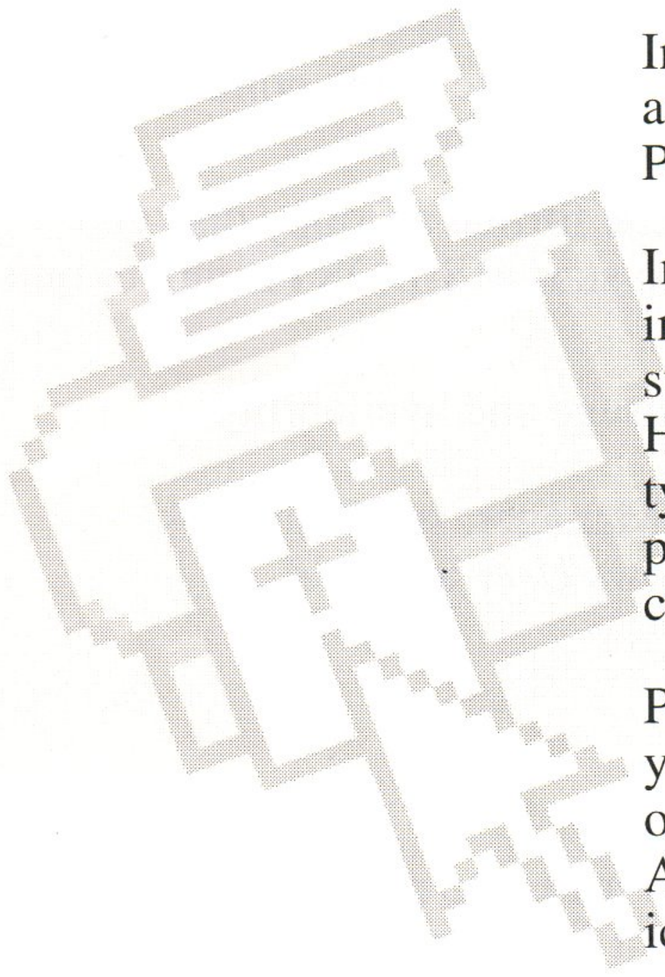
Online Tutorial

Windows version 3.1 offers an online Tutorial in which you can practice working with a mouse and performing basic Windows tasks.

To run the Microsoft Windows Tutorial, you need a mouse and a VGA (or better) monitor.

You can run the Tutorial when you run Windows Setup or at any time afterward. To run the Tutorial after you have set up Windows, choose the Windows Tutorial command from the Help menu in Program Manager.

Printing Enhancements



Installing printers and connecting to network printers are now easier and smoother—you can perform these tasks by using either Windows Print Manager or Windows Control Panel.

In addition, several of the Windows printer drivers have been improved, making it quicker and easier to print files. For example, support has been added for printing at a baud rate of 19200 on a Hewlett-Packard LaserJet Series II or III printer. If you are using this type of printer, you can take full advantage of this feature and increase printing speed dramatically. For more information, see the manual that comes with your HP LaserJet printer.

Print Manager now is faster and more efficient, returning control to your applications sooner. This allows you to quickly return to working on your documents while other documents or files are being printed. And remember—you can print most files just by dragging their file icons from File Manager onto the minimized Print Manager window.

For more information about printing, see Chapter 6, "Print Manager," in the *Microsoft Windows User's Guide*.

New Multimedia Features

Windows version 3.1 has several new features that enable applications to use multimedia devices, so that different kinds of media, including sound, graphics, animation, and video, can be added to files and documents. Included with the new multimedia features is support for many popular sound devices, such as sound cards and devices with Musical Instrument Digital Interface (MIDI) capabilities.

With the new Windows sound support, you can perform simple sound tasks, such as selecting sounds to play when you start or quit Windows, in addition to more sophisticated tasks, such as playing MIDI information on a MIDI synthesizer or recording voice annotations to include in a document.

You can also use other applications that take advantage of the complete set of Windows multimedia features, including the use of animation, CD-ROM drives, and video support. For example, you could use a CD-ROM encyclopedia that includes sound. Using a video graphics adapter (VGA), you could use a presentation application to create presentations that include both motion and sound.

The following are among the sound features included with Windows:

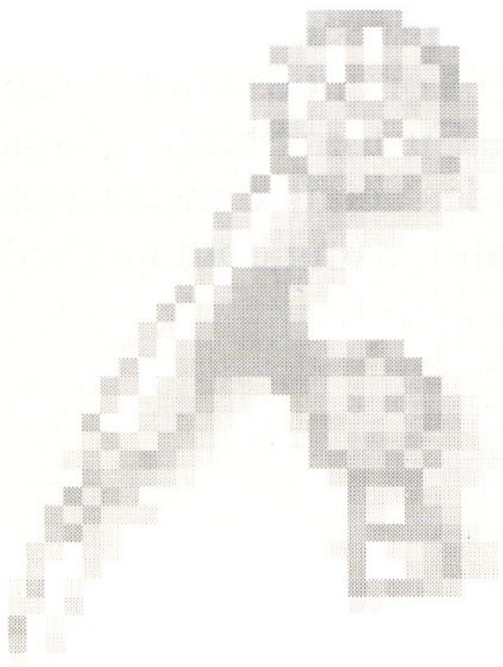
- **Media Player**

  Media Player is a new Windows application you can use to control the playing of various kinds of media files on hardware such as sound cards, CD-ROM drives, and videodisc players. It can play animation, sound, and MIDI sequencer files. For more information about using Media Player, see Chapter 12, "Additional Accessories," in the *Microsoft Windows User's Guide*.

- **Sound Recorder**

  With Sound Recorder, you can play, record, and edit sound files that have the WAVE format. You can then assign the sounds that you record to system or application events, or use the sounds in other applications that support object linking and embedding.

  The Sound Recorder window graphically displays the sound wave as if it were being displayed on an oscilloscope. For more information about using Sound Recorder, see Chapter 12, "Additional Accessories," in the *Microsoft Windows User's Guide*.



- **Enhancements to Control Panel**

  Control Panel now provides options for setting up device drivers and controlling how sound works in Windows. With the new Drivers option, you can set up drivers for almost any device you want to use. Although most devices come with the appropriate driver, Windows also supplies sound drivers for common sound devices.

  Using the enhanced Sound option in Control Panel, you can now assign unique sounds to different system and application events. For example, you can select a sound to play every time you start or quit Windows, when an application displays a message, or in place of your computer's warning beep.

  If you are using sound devices that have MIDI capabilities, such as a synthesizer, you can use the new MIDI Mapper option in Control Panel to specify MIDI settings for your device. Note that MIDI Mapper is available only if you have a driver installed that supports a MIDI device.

  For more information about the new driver and sound support in Control Panel, see Chapter 5, "Control Panel," in the *Microsoft Windows User's Guide.*

Additional Features and Enhancements

The following list highlights additional features and enhancements in Windows version 3.1:

- **Setup enhancements**

  Setup has been greatly simplified. You can now choose Express Setup and have the Setup program automatically set up Windows. You just type your name and answer a few simple questions, such as what type of printer you have.

  If you need more control over how Windows is set up—for example, if you want to set any special printer options or choose not to set up some Windows components—you can use Custom Setup. Chapter 1, "Setting Up Windows," in this book provides detailed instructions on how to set up Windows on your computer, using both methods.

- **Improved support for non-Windows applications**

  Windows now includes program information files (PIFs) for even more non-Windows applications. These files are set up when you add your non-Windows applications to Program Manager, making it easier to run these applications from within Windows.

  Note A non-Windows application is designed to run with MS-DOS but not specifically with Windows.

  When you run Windows in 386 enhanced mode, improved virtual-memory functions make it smoother to run several non-Windows applications in the background and to switch between them.

  Full mouse support has been added to non-Windows applications running in a window. You can now use your mouse to move around in and select items in these applications.

  Different font sizes are available for your non-Windows applications, so you can pick the font size that best suits your needs.

  Also included is a collection of icons (in the MORICONS.DLL file) that represent many of the most popular non-Windows applications. You can now use these icons when adding non-Windows applications to Program Manager.

  For more information about running non-Windows applications in Windows, see Chapter 7, "Non-Windows Applications," in the *Microsoft Windows User's Guide.*

- **Network enhancements**

  When you restart Windows, your system is reconnected to all the printers and network drives you were previously connected to. For more information about using networks, see Appendix A, "Windows and Networks," in the *Microsoft Windows User's Guide.*

- **Character Map**

  Windows Character Map is a new accessory application that you can use to insert special characters not found on your keyboard into your application. These characters include accented characters and characters in the Symbol fonts. For more information about using Character Map, see Chapter 12, "Additional Accessories," in the *Microsoft Windows User's Guide.*

- **Object Packager**

  Windows Object Packager is a new accessory application you can use when linking and embedding information. For more information about Object Packager, see Chapter 13, "Integrating Your Windows Applications," in the *Microsoft Windows User's Guide.*

- **Online Help enhancements**

  In addition to a complete, indexed Help system for all of Windows, you can now get context-sensitive Help for the task you are performing at the moment. Context-sensitive Help is available in all dialog boxes in the following Windows applications: Windows Setup, Program Manager, File Manager, Print Manager, PIF Editor, and Control Panel. Now, getting information about the task you are performing is as easy as choosing the Help button or pressing F1.

  For more information about using Help, see Chapter 1, "Windows Basics," in the *Microsoft Windows User's Guide.*

- **Improved startup configuration**

  When Windows starts, it runs (or loads) any applications whose program-item icons you placed in the new StartUp group in Program Manager.

  In Program Manager and File Manager, you can preserve the contents and positions of windows and icons, and any menu settings you change, from one Windows session to the next.

  For more information about using Program Manager, see Chapter 3, "Program Manager," in the *Microsoft Windows User's Guide.*

- **More ways to customize your desktop**

  Windows version 3.1 now has more desktop color schemes to choose from, including three designed for use with LCD monitors.

  Also included are screen savers that display moving graphics or text on your screen while you are not actively working with Windows. Screen savers reduce the wear on your screen and can be password-protected so that your work remains private. For more information about the new desktop features, see Chapter 5, "Control Panel," in the *Microsoft Windows User's Guide.*

- **Serial-port enhancements**

  Windows now includes additional communications settings for your serial ports. You can use serial ports that were not previously recognized by Windows and set separate interrupts for ports 1 and 3, in addition to ports 2 and 4, so that you can use these ports simultaneously. For more information about this feature, see Chapter 5, "Control Panel," in the *Microsoft Windows User's Guide.*

- **Standardized dialog boxes**

  Many of the common dialog boxes, such as those that appear when you choose the Open, Save As, Browse, and Print Setup commands, now look the same throughout Windows, making tasks easier to perform between Windows applications. For more information about performing these tasks, see Chapter 2, "Application Basics," in the *Microsoft Windows User's Guide.*

- **New collection of application icons**

  Program Manager now offers a collection of icons that you can choose from to represent your applications. Whether you are adding an application to a group or changing application information, you can choose the most suitable icon.

  Also included is a file (MORICONS.DLL) that contains icons used to represent non-Windows applications.

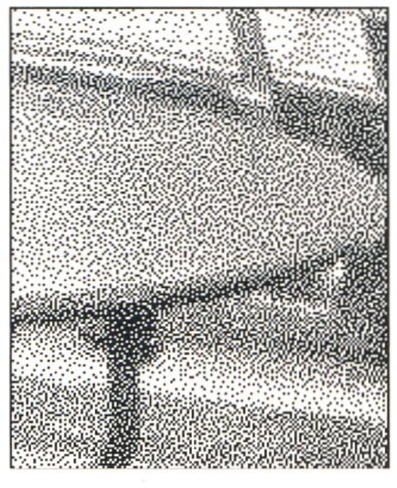
  For more information about how to use these icons, see Chapter 3, "Program Manager," in the *Microsoft Windows User's Guide.*

Performance Improvements

Windows version 3.1 includes many significant improvements to overall performance. For example:

- Program Manager now requires less system memory, so you can create more groups without using up memory.
- File Manager is much faster: Your screen updates faster when you move and copy files and when you search drives and directories. In addition, you can now quit a time-consuming process before it is complete—for example, you can stop a CD-ROM drive search if you need to use your computer.
- Running a non-Windows application in a window is now much faster in 386 enhanced mode. Also switching between Windows and a non-Windows application is smoother and faster.
- Printing is faster and more efficient: Your documents print faster, and control is returned to your applications sooner.
- Disk-caching is improved with SMARTDrive. Opening, saving, and managing files by using non-Windows applications is now smoother and faster.

A Brief Tour of Microsoft Windows



Chapter 3

Introduction

This chapter introduces you to the Microsoft Windows operating system version 3.1—what it is, what it looks like, and how it works. You may want to try out some of the Windows features as you read this chapter.

This tour is designed for mouse users. If you don't have a mouse, the tour can still provide a good overview of Windows. To learn about specific keyboard procedures, see Chapters 1 and 2 in the *Microsoft Windows User's Guide*.

If you are new to using a mouse, you can use the online Microsoft Windows Tutorial either during the Setup program or later from within Windows. The first Tutorial lesson introduces you to basic mouse procedures. For more information, see "Running the Microsoft Windows Tutorial" at the end of this chapter.

If Windows is not yet set up on your system, read Chapter 1, "Setting Up Windows," in this book before continuing.

Starting Windows

After Windows is set up on your computer, it is easy to start:

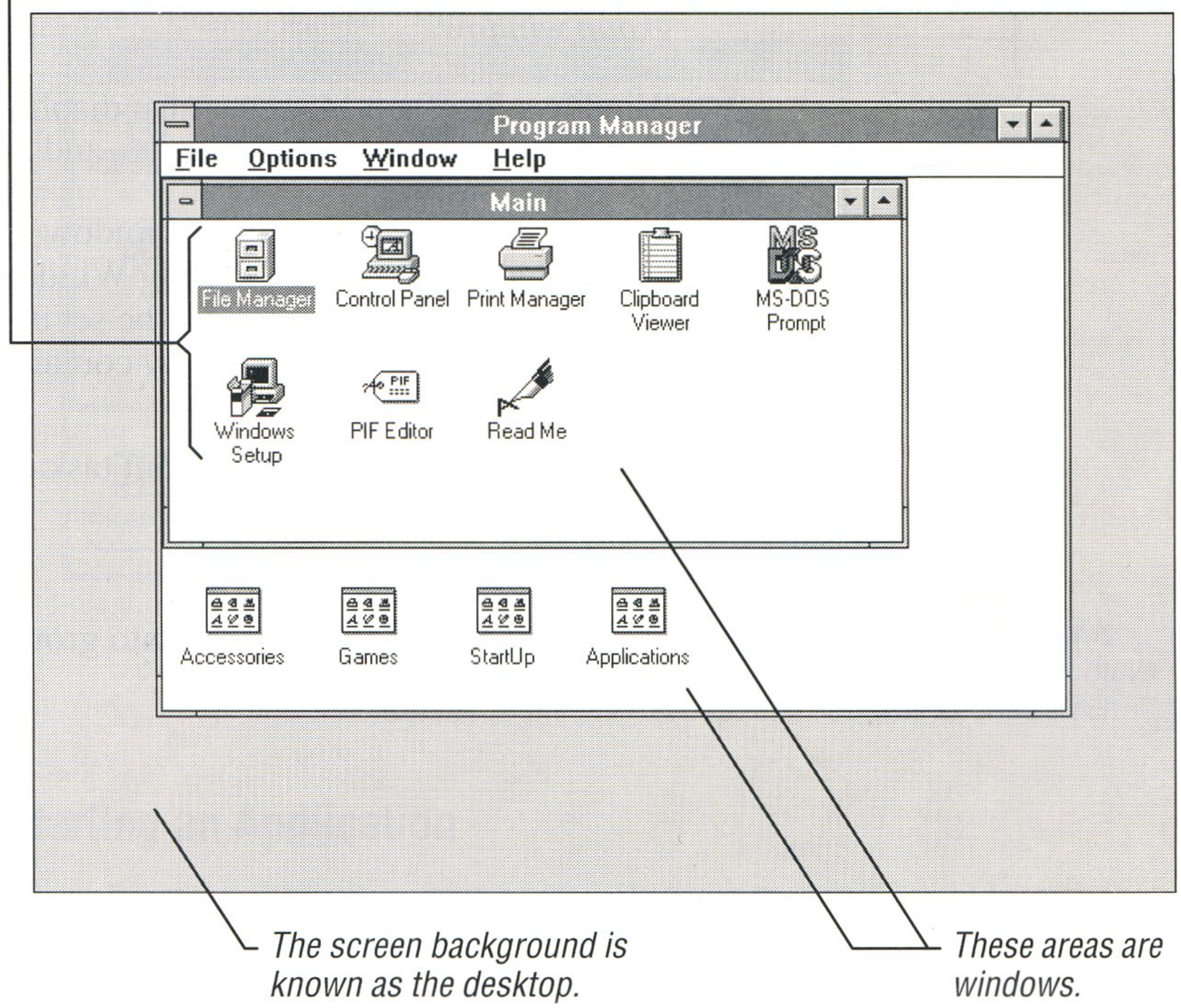
- At the MS-DOS prompt (for example, C>), type **win**, and then press ENTER.

Windows Basics

As you work with Windows, there are a few basic terms you need to become familiar with.

You do your work in rectangular areas of the screen called *windows.* These windows appear on a background called the *desktop.* The *applications* you work with (such as your word processing or spreadsheet programs) are represented in Windows by small graphical symbols called *icons.*

You often carry out an action in Windows by *choosing* an item: for example, choosing an icon can start an application. You choose an icon by double-clicking it.



Program Manager

When you start Windows, the first thing you see is Program Manager, which continues to run as long as you are using Windows. Initially, the Program Manager window displays the contents of the Main *group*. A group is a collection of applications you can run with Windows. The names and icons for the applications in the group are displayed in the *group window*.

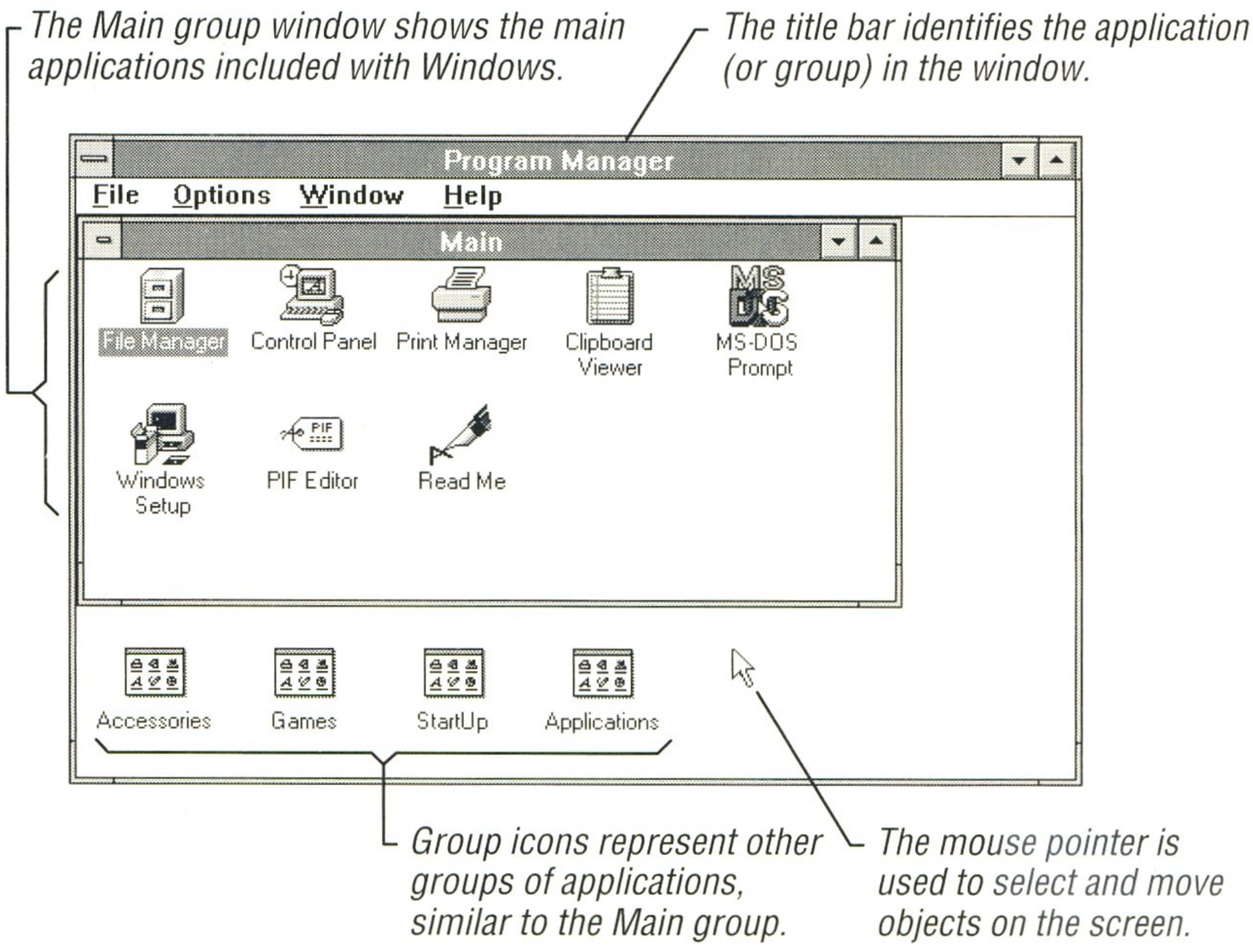
Windows Program Manager also displays icons for other groups of applications: Accessories, Games, and StartUp.

Note Your Program Manager window may contain another group icon called Applications. During Windows Setup, applications already installed on your computer can be set up for you to use with Windows. The Applications group window contains icons for those applications.

You can perform many important tasks by using Program Manager. For example, you can:

- Start applications.
- Organize your applications into groups for easy access.
- Quit Windows.

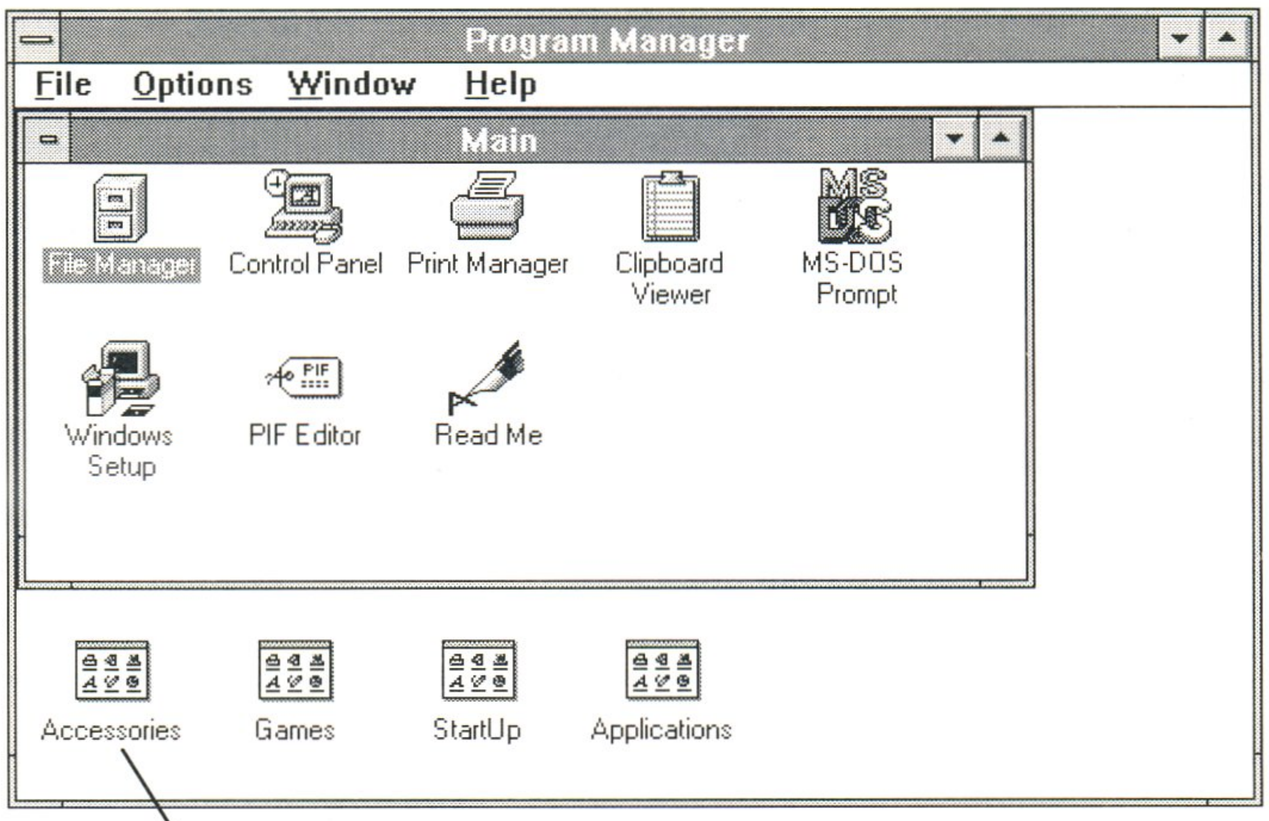
The following illustration points out some of the Windows features displayed when you first start Windows.



Starting an Application

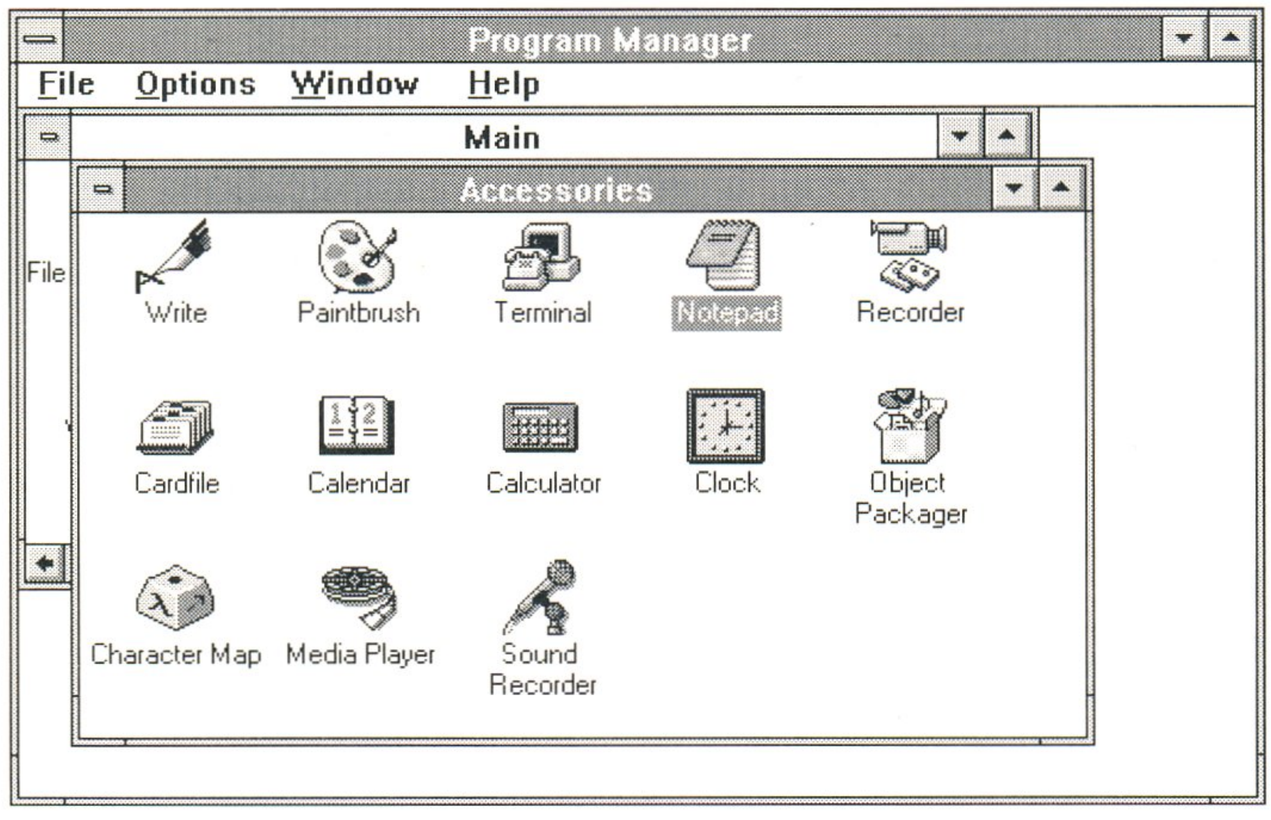
From Program Manager, you can easily start an application by using the mouse to double-click (or "choose") its icon, called a *program-item icon*. Icons for many applications are in groups other than the Main

group, so you may need to open another group window to find the icon you want. For example, you need to open the Accessories group to start Windows Notepad.



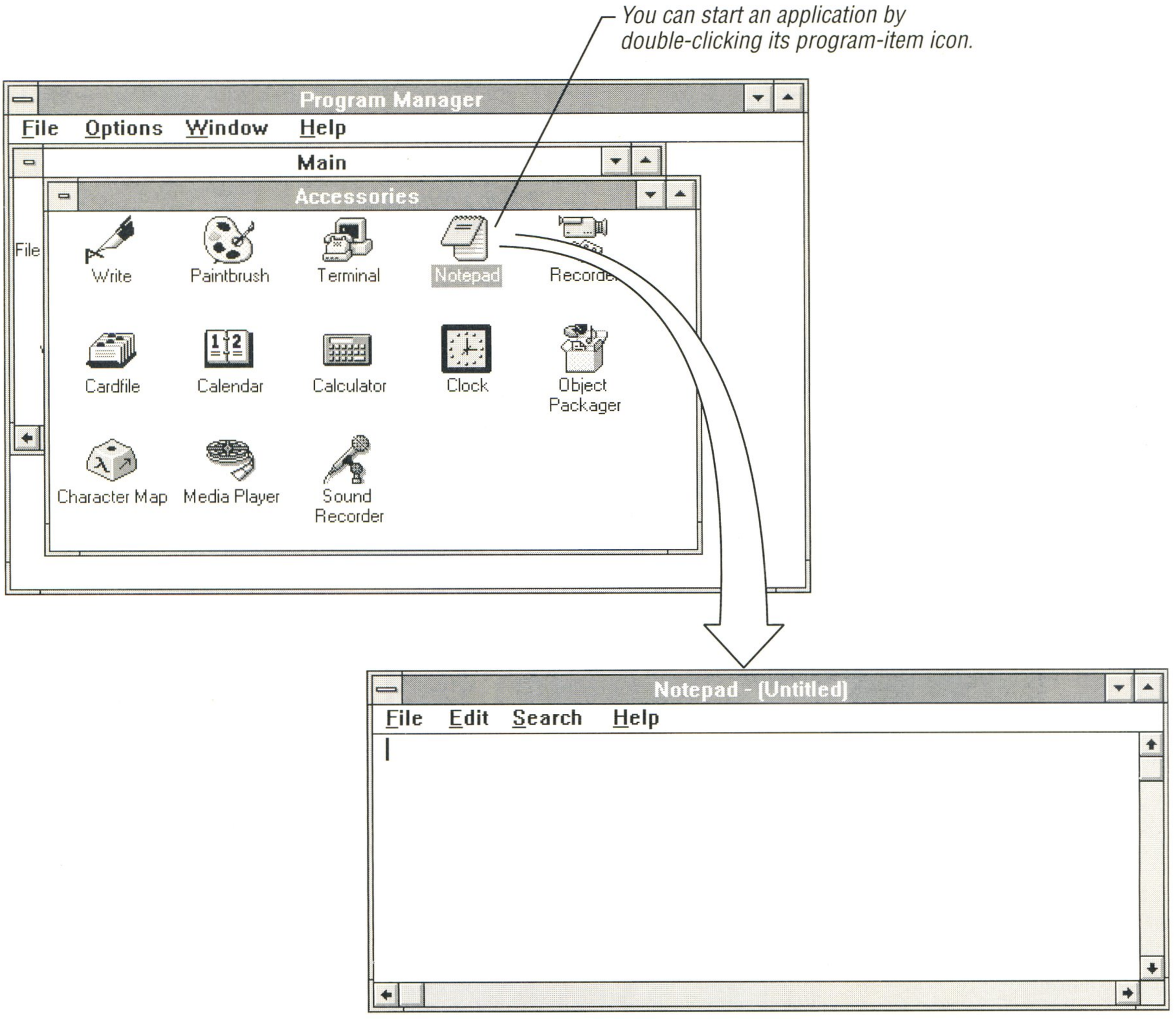
You can open a group window by double-clicking the group icon.

The Accessories group window displays icons for additional applications you can run.



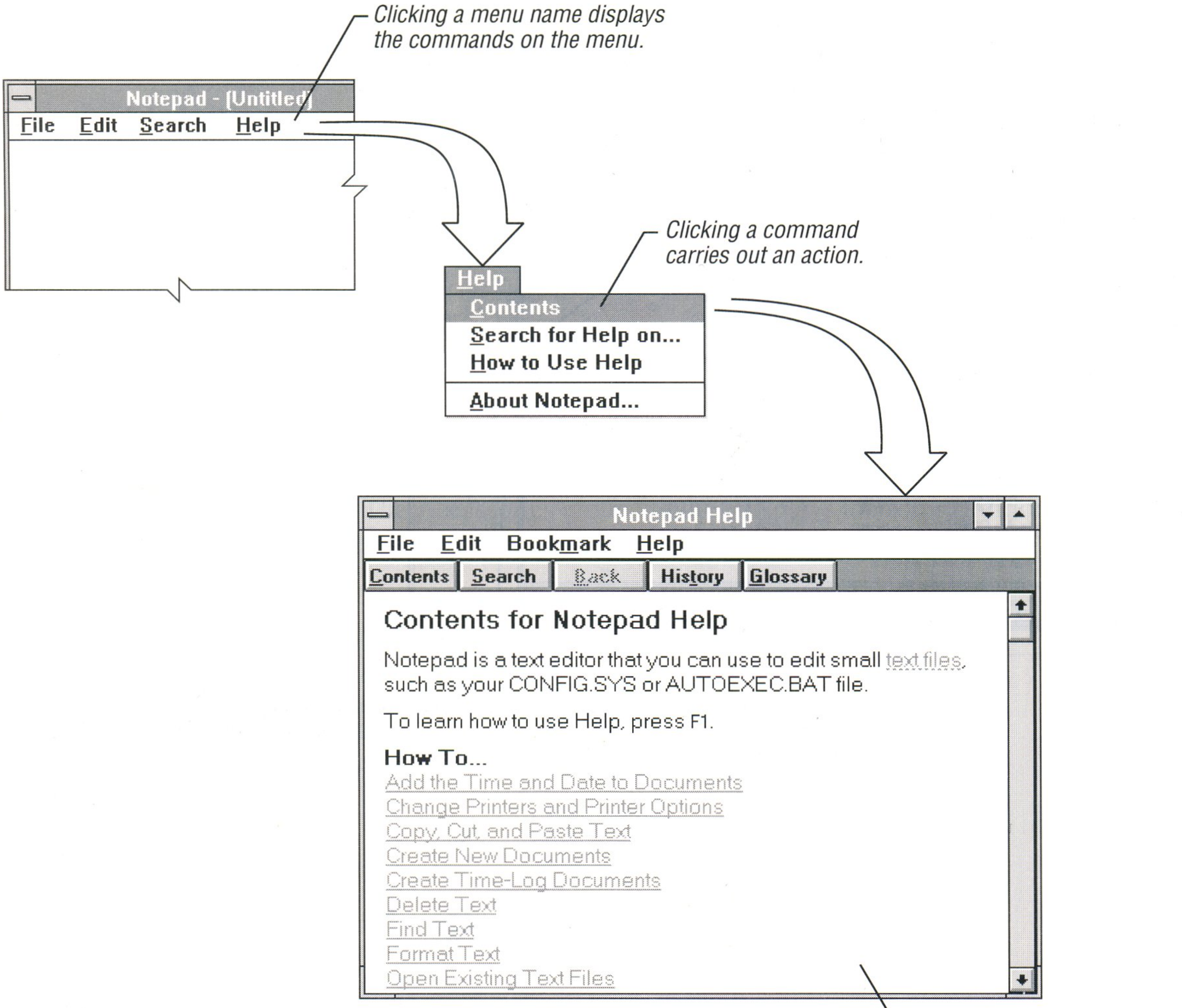
When you double-click ("choose") the icon, in this case Notepad, the application appears in an *application window,* ready for you to work with it.

The Notepad window is now the *active window*. The active window is generally the window in the foreground. To make another window active, you click anywhere in the window.



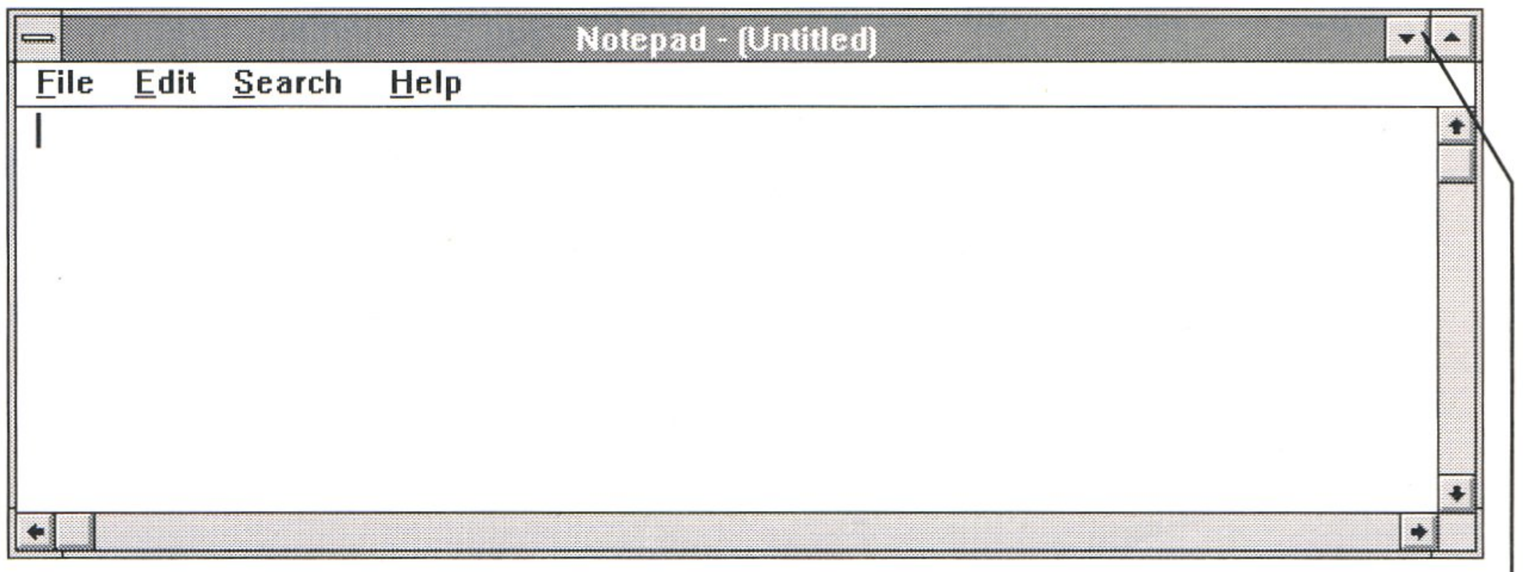
Using a Menu

In each application window, and in other windows as well, is a list of *menu* names beneath the title bar. A menu contains a list of *commands,* which are actions you can carry out with Windows. You click menu names and commands once to choose them.


Clicking a menu name displays the commands on the menu.
Notepad - (Untitled)
File Edit Search Help
Help
Contents
Search for Help on...
How to Use Help
About Notepad...
Clicking a command carries out an action.
Notepad Help
File Edit Bookmark Help
Contents Search Back History Glossary
Contents for Notepad Help
Notepad is a text editor that you can use to edit small text files, such as your CONFIG.SYS or AUTOEXEC.BAT file.
To learn how to use Help, press F1.
How To...
Add the Time and Date to Documents
Change Printers and Printer Options
Copy, Cut, and Paste Text
Create New Documents
Create Time-Log Documents
Delete Text
Find Text
Format Text
Open Existing Text Files
In this case, the command opens a Help window.

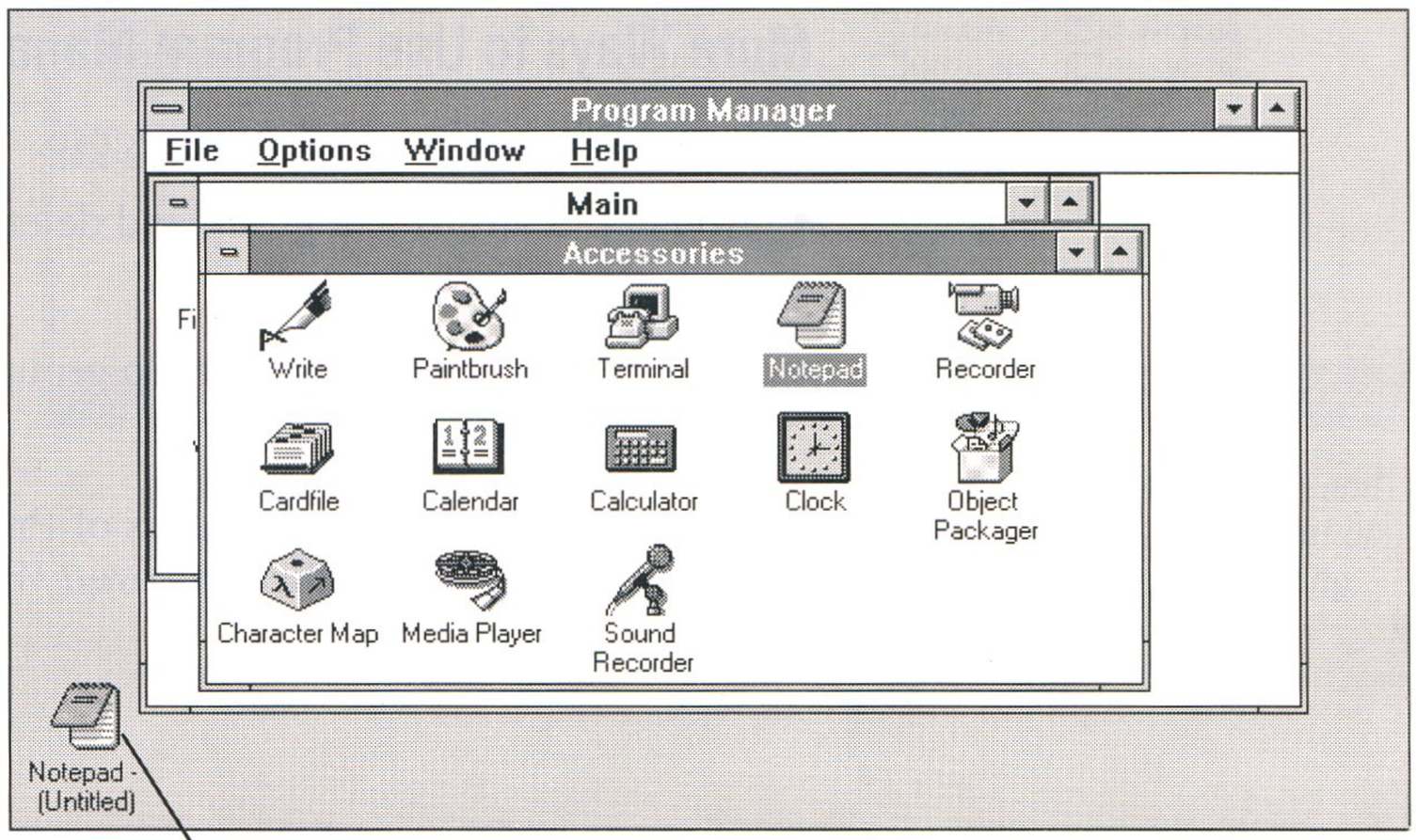
Reducing an Application Window to an Icon

As you work with Windows, you may want to temporarily put aside an application but keep it easily available to use later. You can avoid clutter on your screen if you reduce the application window to an icon by clicking its Minimize button; the icon stays on the Windows desktop until you need to use the application again.



You can reduce an application window to an icon by clicking the Minimize button.

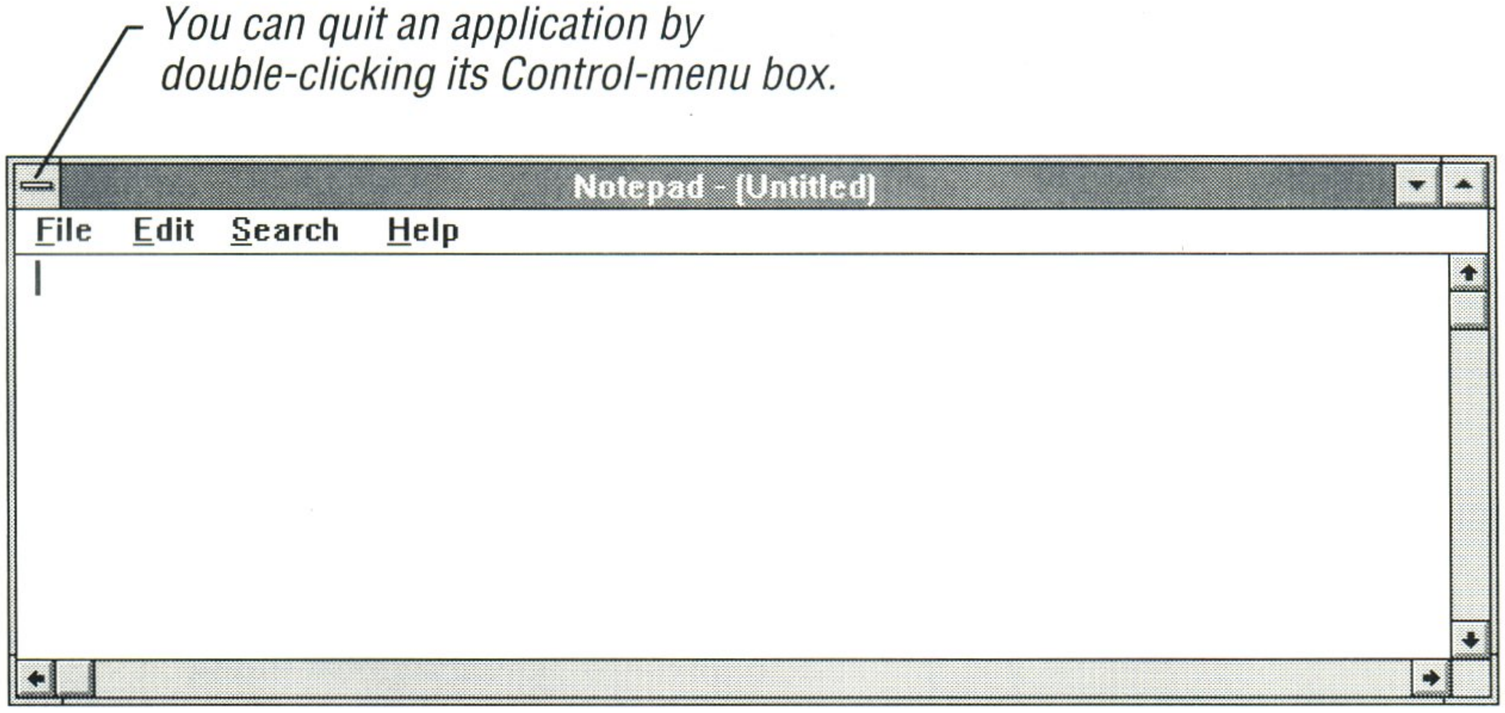
The application is still running and available, but takes up less space as an *application icon.*



Application icon

Quitting an Application

Using a mouse, quitting an application is as easy as starting it. The quickest method of quitting is to double-click the application's *Control-menu box.* (You can also press ALT+F4. Or you can click the Control-menu box once to display the Control menu, and then click the Close command.)



The application window closes. If you have any unsaved work, you are prompted to save it before quitting the application.

More Ways to Use Program Manager

You can also use Program Manager to:

- Add applications to a group and delete applications from a group.
- Create and delete groups.
- Add applications to the StartUp group so that they start when Windows starts.

For details on these and other uses of Program Manager, see Chapter 3, "Program Manager," in the *Microsoft Windows User's Guide.*

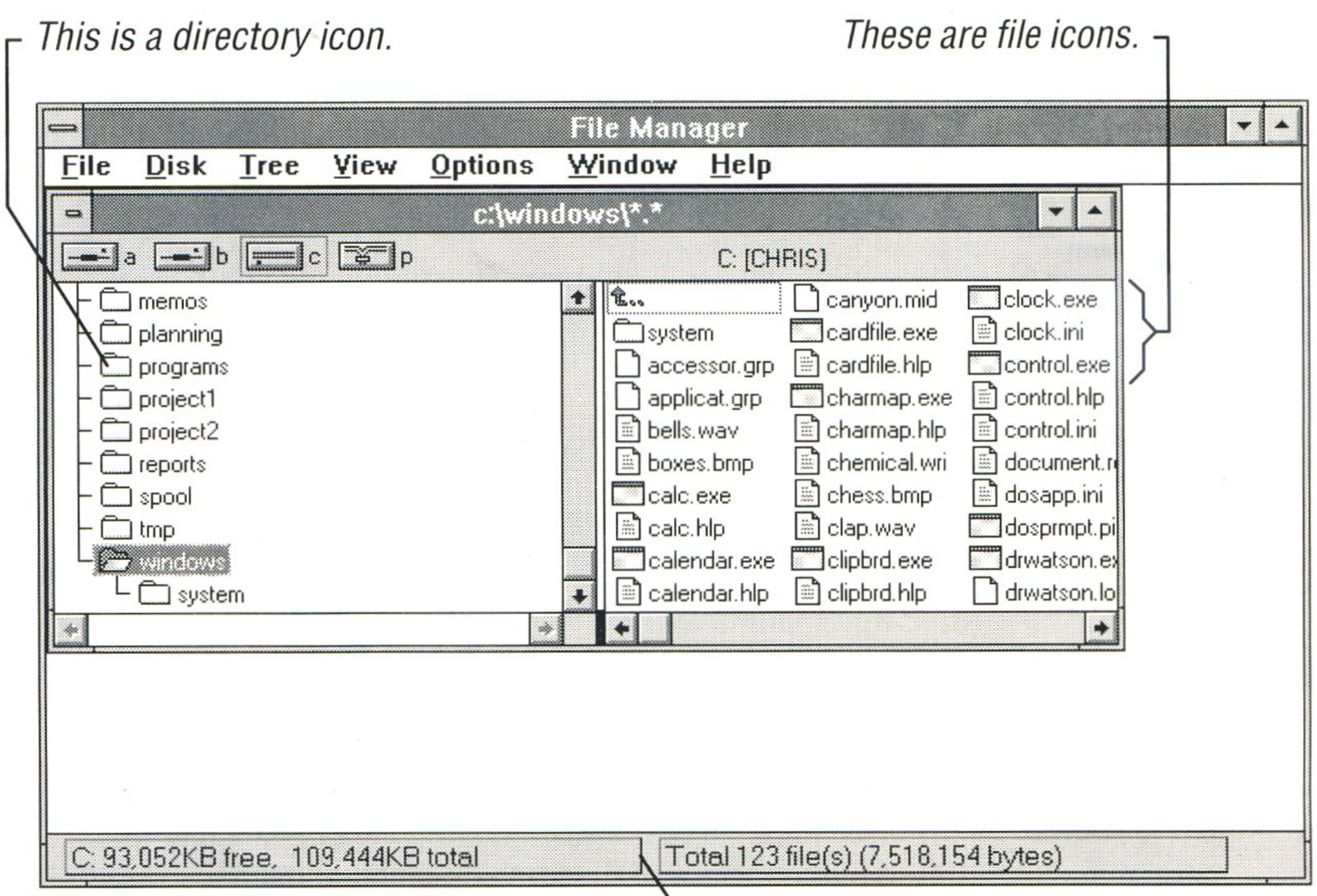
File Manager

Windows File Manager provides a graphical representation of files and directories to help you organize them and simplify file maintenance.

You can start File Manager by double-clicking its icon in the Main group window.

You can perform many tasks by using File Manager. For example, you can:

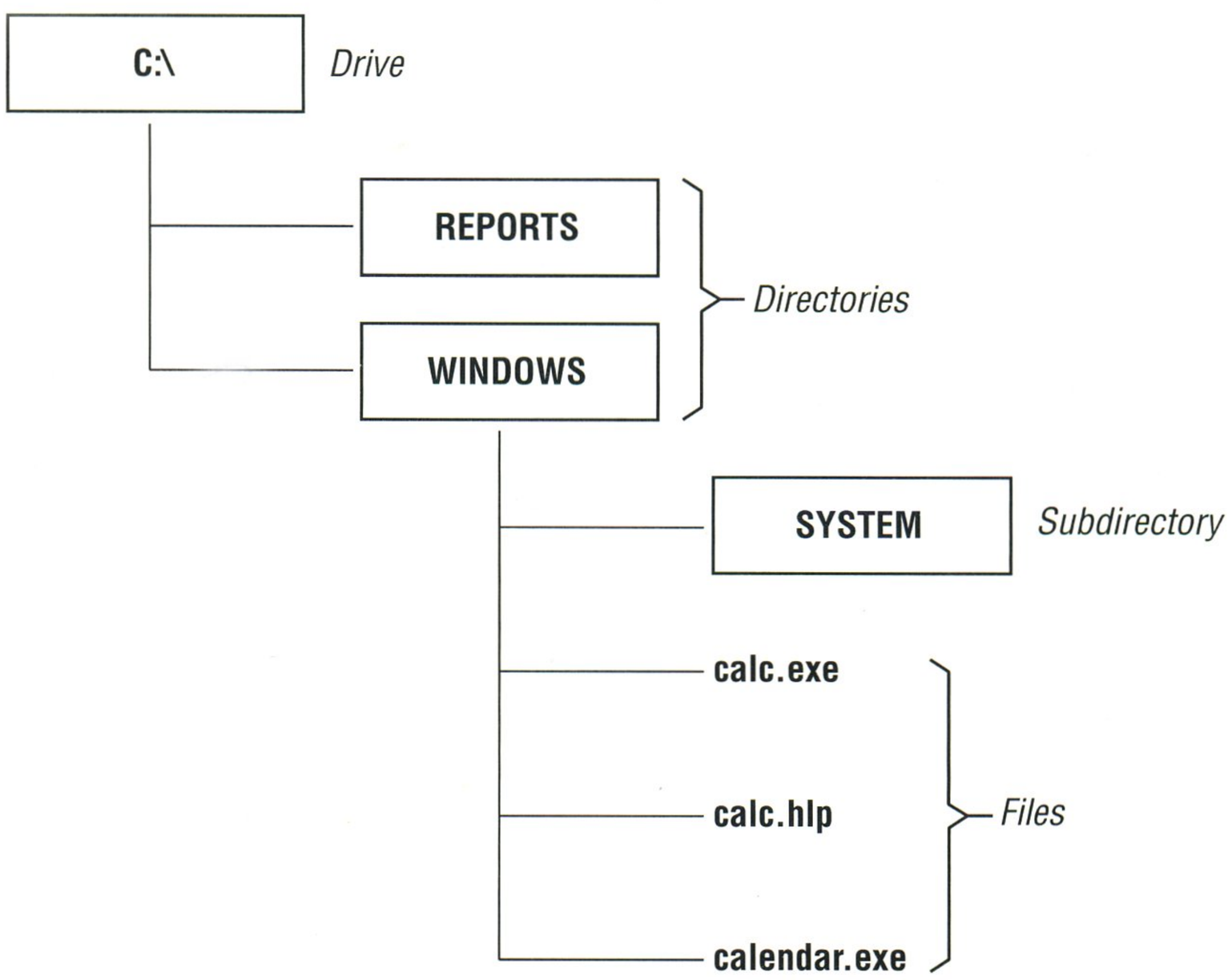
- View the contents of your directories.
- Move, copy, and delete files and directories.
- Change to other disk drives, including network drives.



Files and Directories

A *file* is an electronic document or an application that has been given a name and stored on your computer. A file could be a memo you have written, or it might be the word-processing application you used to write the memo. Files have names such as LETTER.TXT and APPLICTN.EXE and can be stored on your computer in *directories.*

A directory is a collection of files and/or other directories (called *subdirectories*) that are stored at the same location on a disk. Two directories that are likely to be on your computer are WINDOWS and SYSTEM.

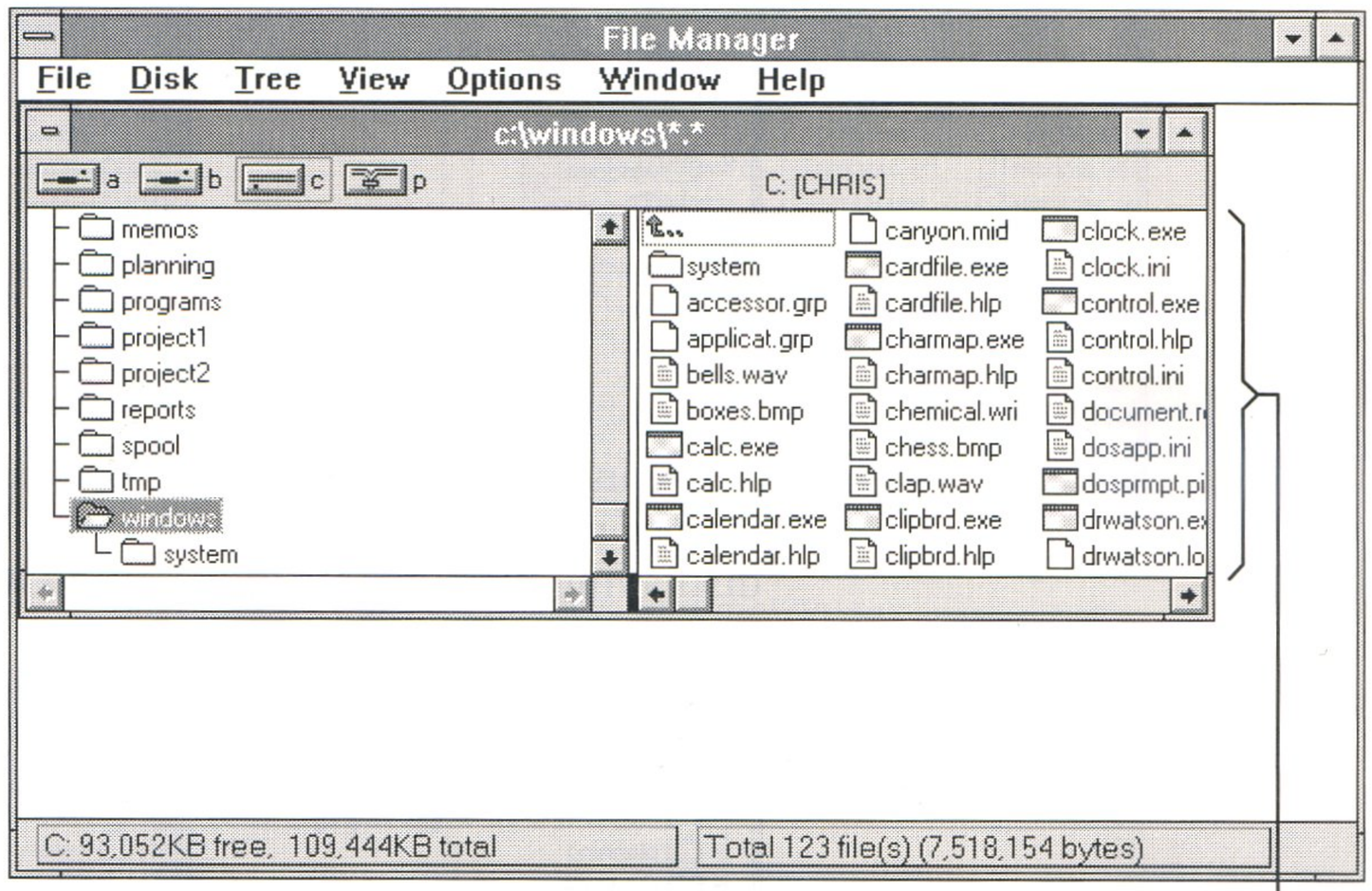


The WINDOWS directory contains the SYSTEM subdirectory, in addition to many of the Windows files. The SYSTEM directory contains additional files.

A *directory window* is a window that appears in the main File Manager window. A directory window graphically displays the relationship of the directories and files that are stored on a disk drive.

The left side of the window displays the directory tree, and the right side displays the contents of the current directory.

The directory tree displays directories on the drive you are using.

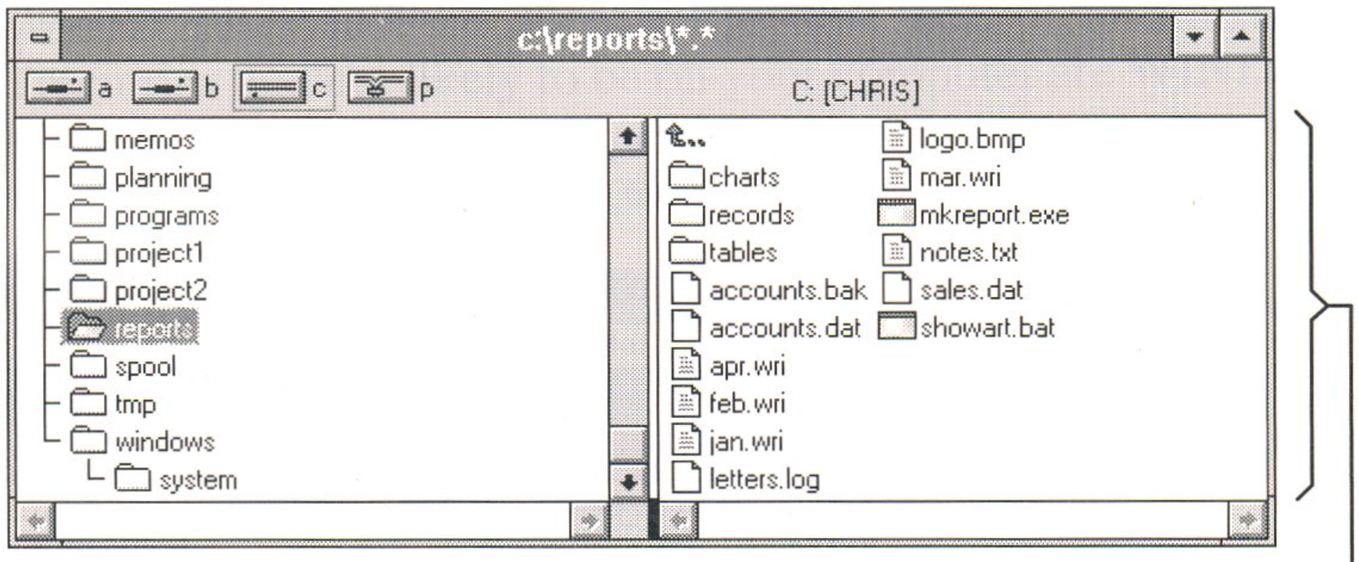


The contents list displays files and subdirectories in the selected directory.

Viewing Directory Contents

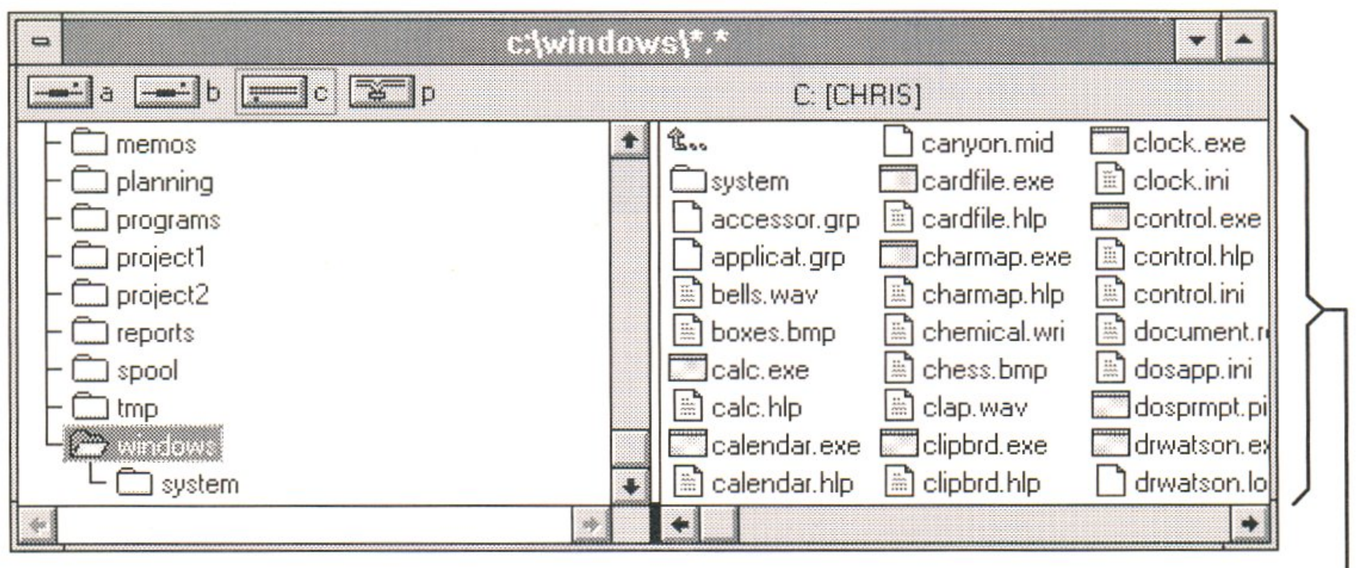
Using File Manager, you can easily scan the contents of a directory. Just open the directory by clicking its name or icon on the left side of the window.

In the following illustration, the REPORTS directory is open, with its contents displayed at the right.



Contents of the REPORTS directory

You can open a different directory, such as WINDOWS, by clicking its icon or name. The information in the right side of the window changes, displaying the contents of the WINDOWS directory.

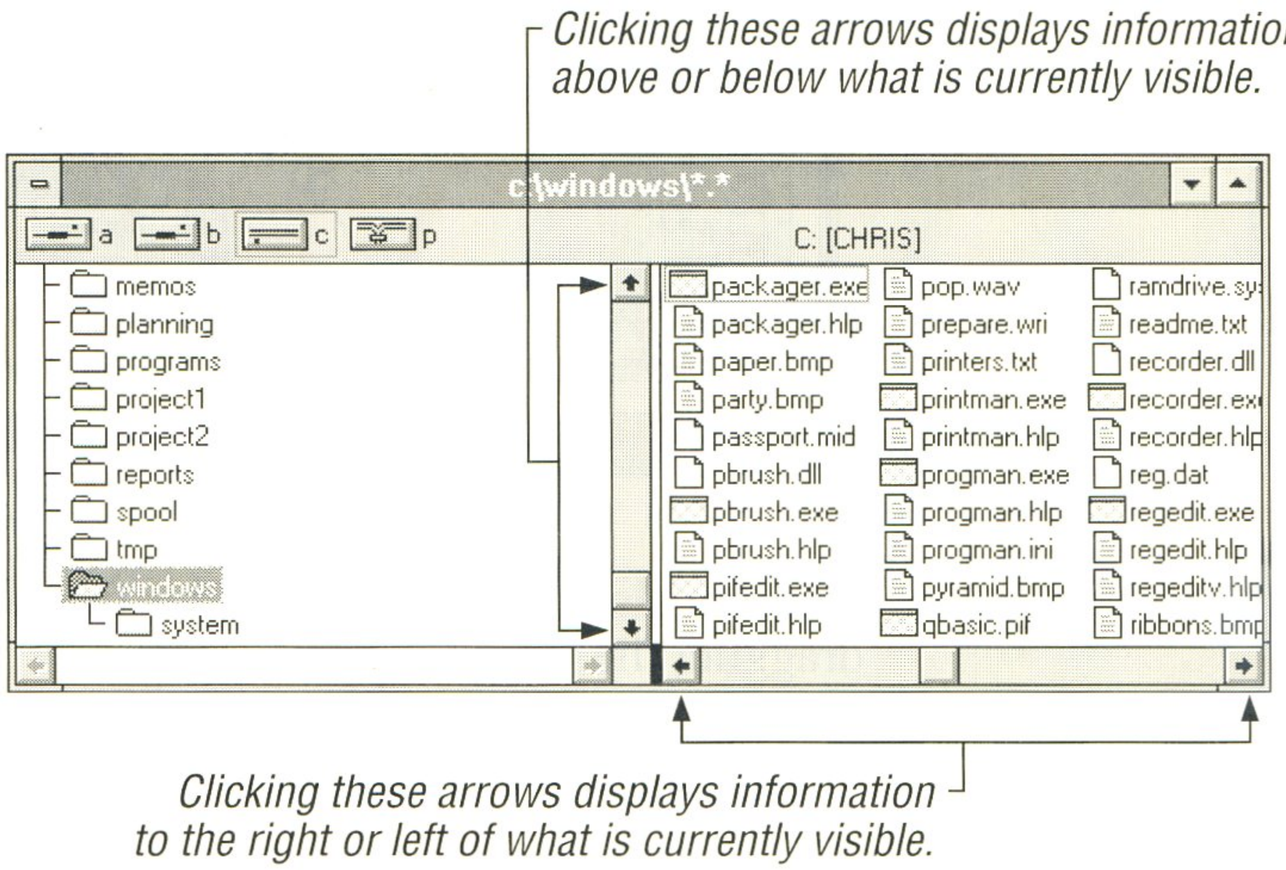


Contents of the WINDOWS directory

Scrolling to View Information

When an application has more text or graphics than can be displayed in its window at one time, you can use *scroll bars* to bring the rest of the information into view. Scroll bars appear along the right side or bottom of any window whenever there is too much information to fit in the window.

These scrolling techniques will be useful in much of your work with Windows.

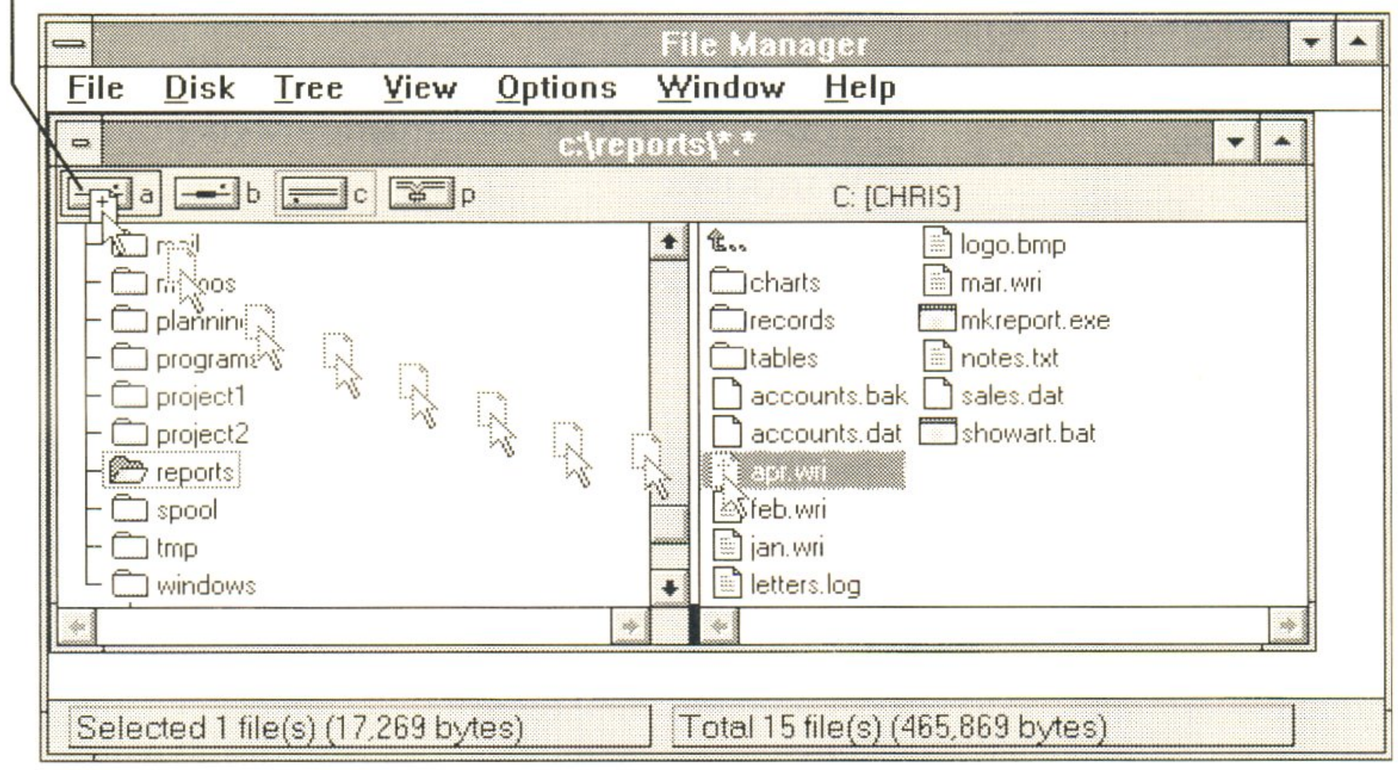


Moving and Copying Files

With the "drag and drop" feature available in File Manager, you can use your mouse to move or copy files quickly.

For example, to copy a file from your hard disk to a disk in drive A, first position the mouse pointer on the file icon. Then press and hold down the left mouse button and move (*drag*) the file icon to the drive icon. Finally, release the mouse button, *dropping* the icon onto the drive icon.

When you move or copy files in File Manager, your mouse pointer appears as in the following illustration.



You can also move and copy files from one directory to another by dragging file icons.

- You can move a file by dragging the file icon to the destination directory icon or window.
- You can copy a file by holding down the CTRL key while you drag the file icon to the destination directory icon or window.

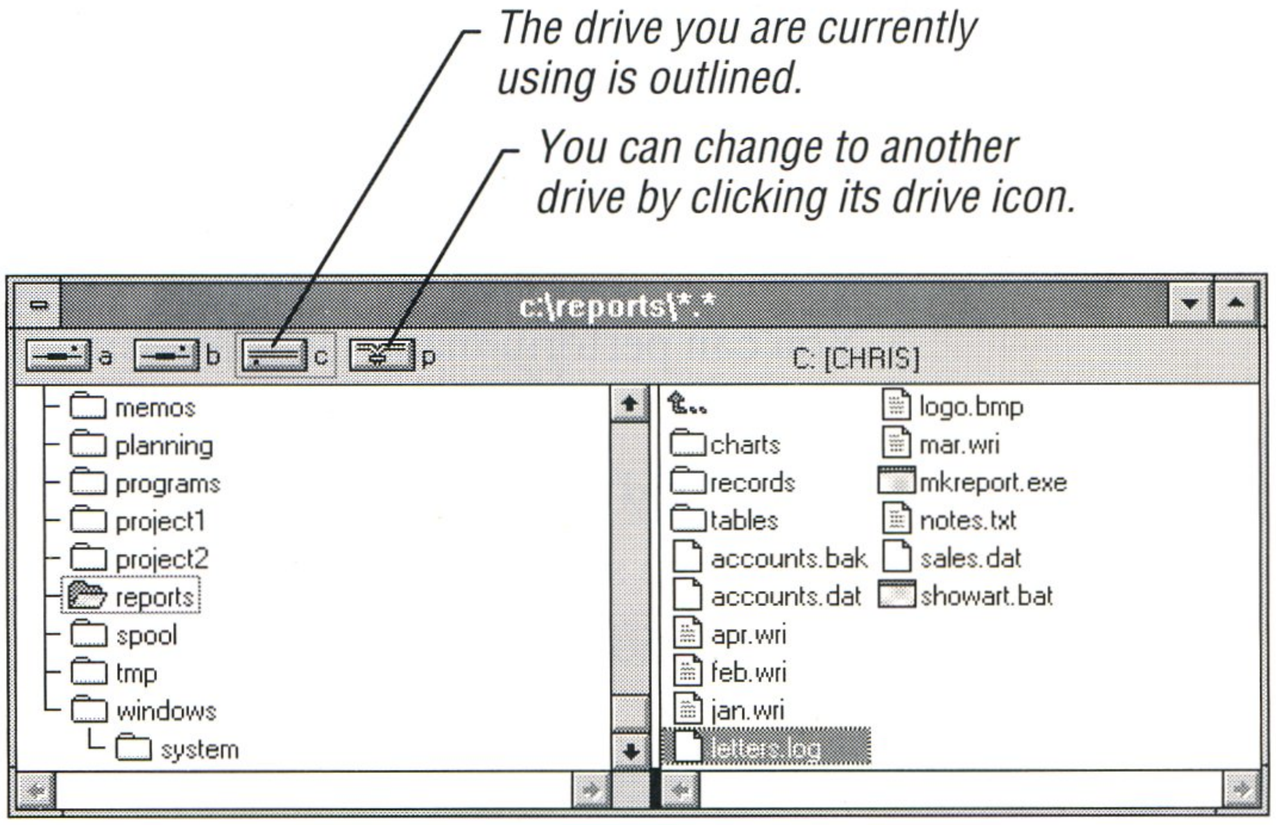
For more information about moving and copying files, see Chapter 4, "File Manager," in the *Microsoft Windows User's Guide*.

Changing Disk Drives

Using File Manager, all of your disk drives are readily available, even any network drives you are connected to.

Each File Manager directory window displays icons for all drives on your system—floppy disk drives, hard disk drives, and network drives—in the space beneath the window title. The icon of the

current drive is outlined. The files and directories on the current drive are those displayed in the directory window.



When you click another drive icon, the directory window displays the contents of that drive. Double-click the drive icon to open an additional directory window.

More Ways to Use File Manager

You can also use File Manager to:

- Connect to network drives.
- Format and maintain disks.
- Print documents.
- Start applications.
- Change the kind and amount of information displayed about each file.
- Create new directories and subdirectories.

For details on these and other File Manager procedures, see Chapter 4, "File Manager," in the *Microsoft Windows User's Guide.*

Control Panel

Windows Control Panel is a tool you can use to adjust settings on your system, such as changing the look of your Windows desktop and configuring certain hardware.

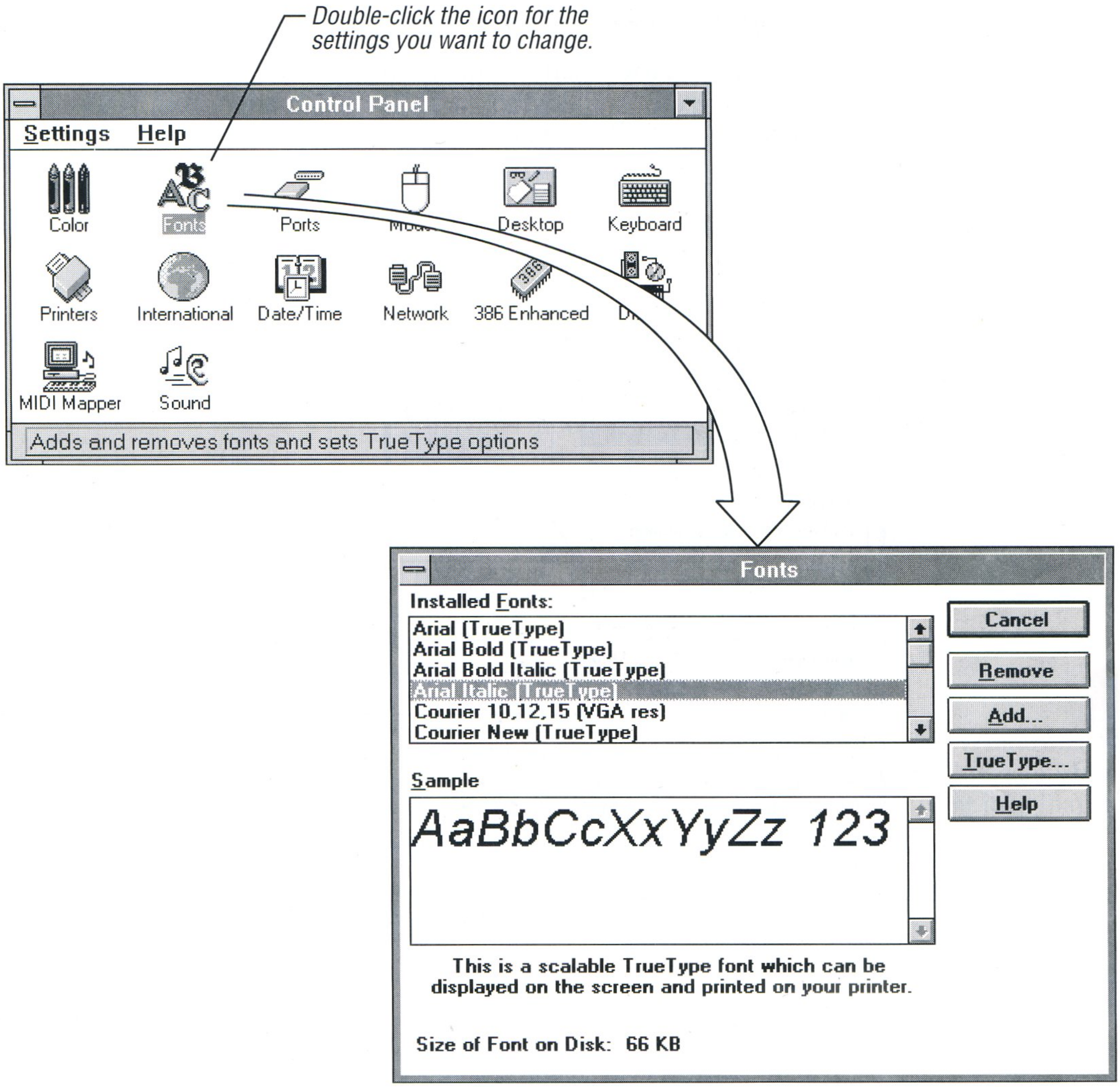
You can start Control Panel by double-clicking its icon in the Main group window.

You can perform many tasks by using Control Panel. For example, you can:

- Add and remove fonts.
- Change screen colors and desktop options.
- Set options for your printer.

Each Control Panel icon represents a set of system settings you can change.

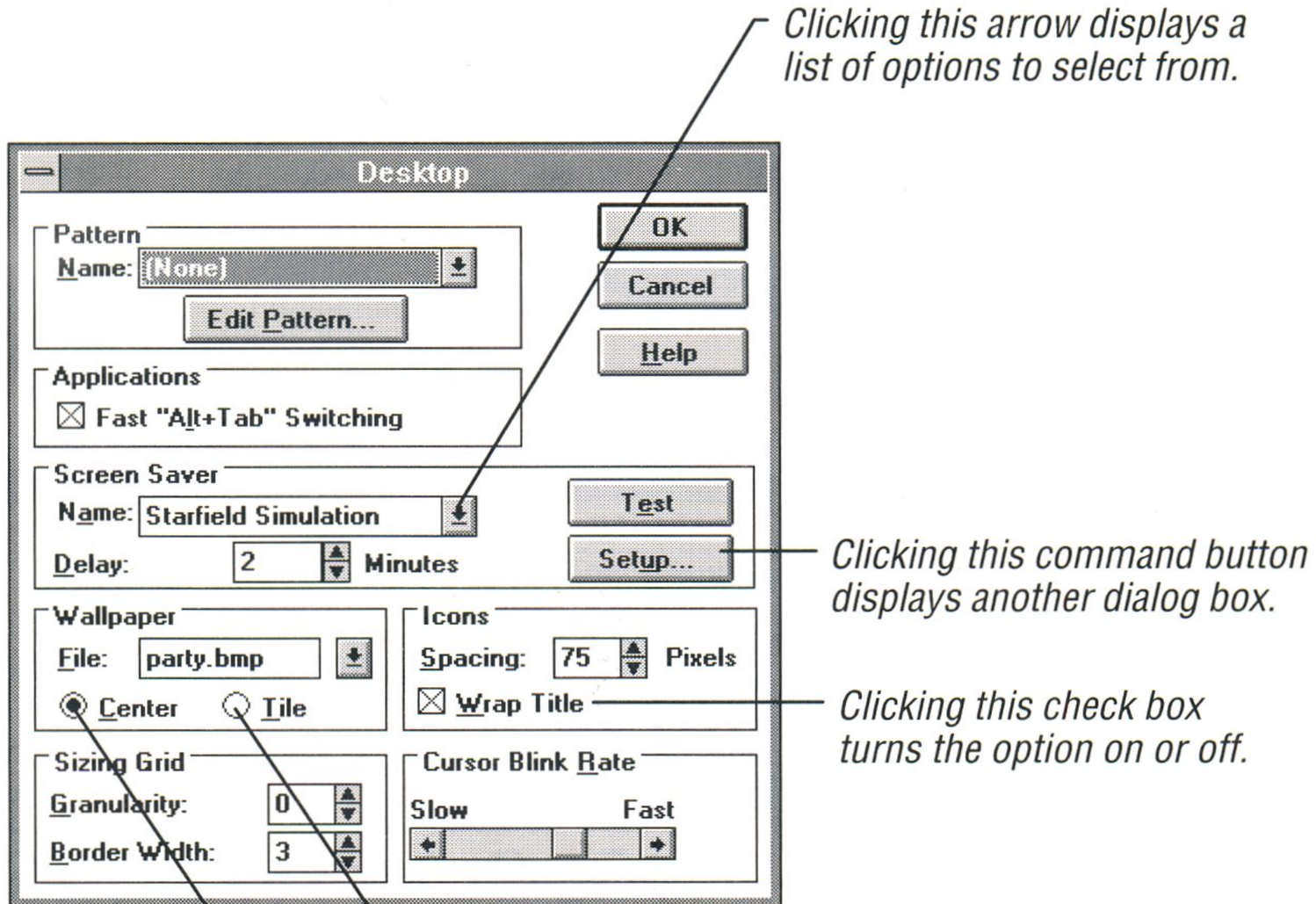
Using the window that appears when you choose a Control Panel icon, you can make changes such as adding and removing fonts.



Note Your fonts may be different from those shown here.

Using Dialog Boxes

The windows you use when you make changes to settings are called *dialog boxes.* A dialog box requests information from you. For example, you might need to select certain options, type some text, or specify settings. You use dialog boxes to supply information throughout your work with Windows.



More About Control Panel

The following list shows more of the kinds of settings you can change by using Control Panel. For a complete list, and for specific information about changing a setting, see Chapter 5, "Control Panel," in the *Microsoft Windows User's Guide.*

- Change options for your mouse or other pointing device, such as the double-click rate.
- Change settings for network connections.
- Specify international settings for applications that use them.
- Assign unique sounds to "system events." For example, you can have Windows play musical notes each time it starts, if you have a sound card.
- Add, configure, or remove sound and Musical Instrument Digital Interface (MIDI) device drivers, if you have a sound card or MIDI device.

Print Manager

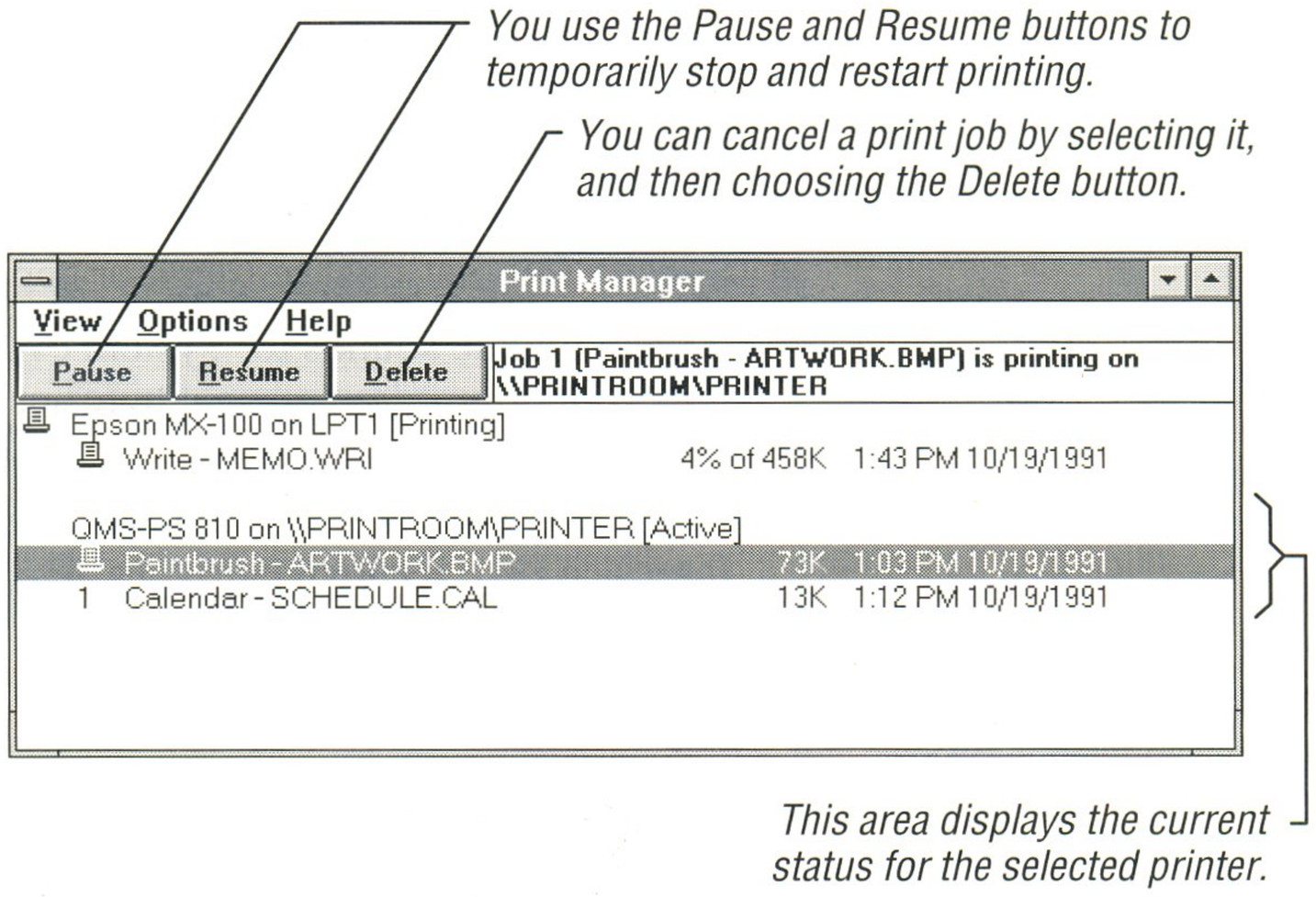
Windows Print Manager controls printing for Windows applications and helps you keep track of your print jobs. The Print Manager window shows the status of your printer(s) and the print jobs that are printing or waiting to be printed.

You can view the Print Manager window by double-clicking its icon in the Main group window.

Print Manager can be used to:

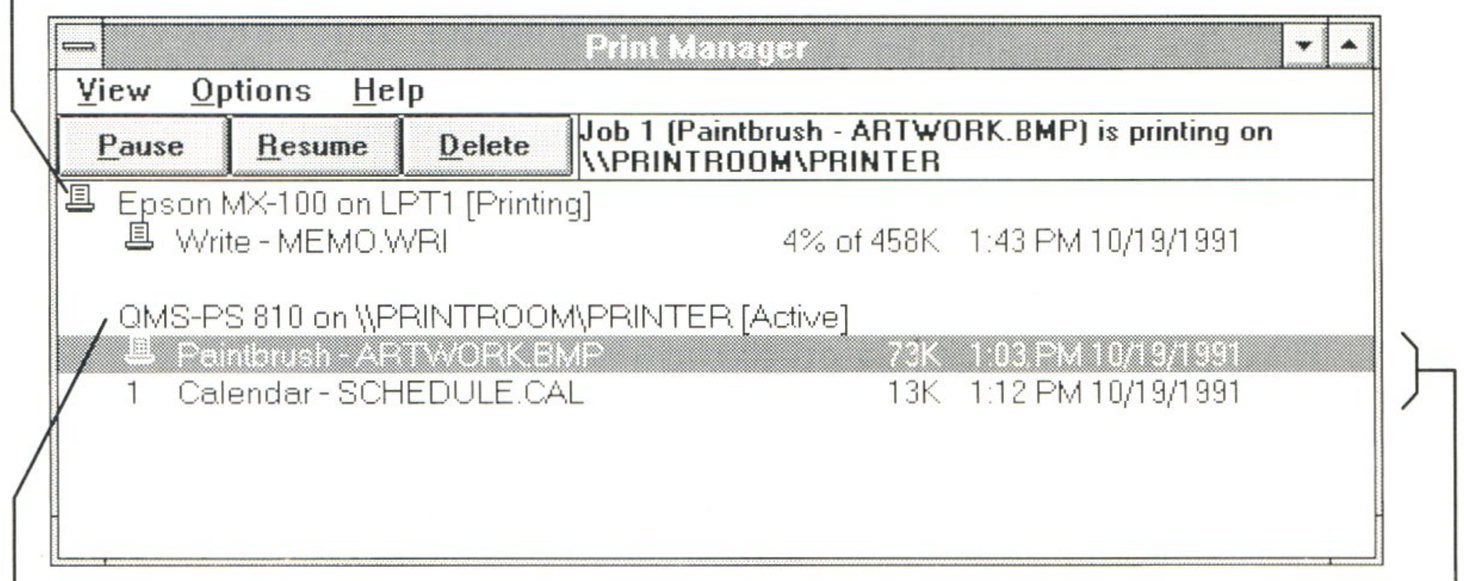
- Check the status of a print job.
- Pause and restart a print job.
- Cancel a print job.

In Windows, you often need to *select* (highlight) an item before you carry out an action on it. For example, in Print Manager you click a print job to select it; then you can pause, restart, or cancel printing by clicking the appropriate button.


You use the Pause and Resume buttons to temporarily stop and restart printing.
You can cancel a print job by selecting it, and then choosing the Delete button.
Print Manager
View Options Help
Pause
Resume
Delete
Job 1 (Paintbrush - ARTWORK.BMP) is printing on \\PRINTROOM\PRINTER
Epson MX-100 on LPT1 [Printing]
Write - MEMO.WRI 4% of 458K 1:43 PM 10/19/1991
QMS-PS 810 on \\PRINTROOM\PRINTER [Active]
Paintbrush - ARTWORK.BMP 73K 1:03 PM 10/19/1991
1 Calendar - SCHEDULE.CAL 13K 1:12 PM 10/19/1991
This area displays the current status for the selected printer.

Checking Printer Status

A common use of Print Manager is to monitor the status of your printers and print jobs. This can be particularly useful when you are printing multiple jobs or printing on a network printer that is located where you can't see it.


This line shows the queue status for a printer that is directly connected to your computer.
Print Manager
View Options Help
Pause Resume Delete
Job 1 (Paintbrush - ARTWORK.BMP) is printing on \\PRINTROOM\PRINTER
Epson MX-100 on LPT1 [Printing]
Write - MEMO.WRI 4% of 458K 1:43 PM 10/19/1991
QMS-PS 810 on \\PRINTROOM\PRINTER [Active]
Paintbrush - ARTWORK.BMP 73K 1:03 PM 10/19/1991
1 Calendar - SCHEDULE.CAL 13K 1:12 PM 10/19/1991
This line shows the queue status for a printer that you are connected to through a network.
These lines display the status of files in the print queue that are printing or waiting to be printed.

More Ways to Use Print Manager

Using Print Manager, you can also:

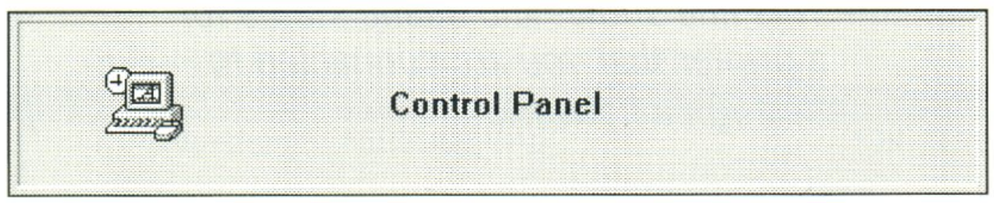
- Set up a printer.
- Change priorities of print jobs.
- Display printing messages.
- Connect to and disconnect from network printers.

For information about these and other uses of Print Manager, see Chapter 6, "Print Manager," in the *Microsoft Windows User's Guide*.

Switching Between Applications

Using Windows to run more than one application at a time can make your job much easier. But when you have opened several application windows, it may become difficult to find applications beneath overlapping windows.

An easy way to keep track of your applications is to use the Windows fast application-switching feature. You can switch quickly to another application by pressing and holding down the ALT key and then pressing the TAB key repeatedly. As you continue to press TAB, the title of each application currently running in Windows appears in the center of your screen.



When you see the application you want, release ALT+TAB. The application appears in the foreground.

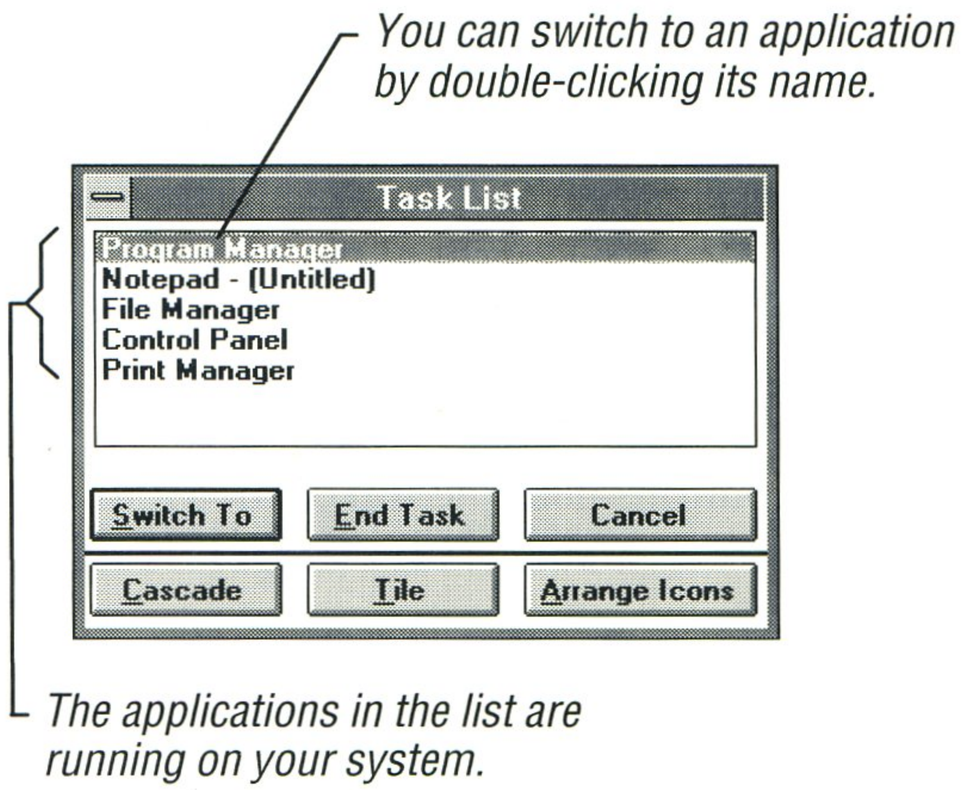
Task List

Another method of managing your applications is to use Task List.

With Task List, you can:

- Display a list of all the applications you are currently running.
- Switch quickly to any running application.
- Rearrange windows and icons on your Windows desktop.

You can display Task List by double-clicking anywhere on the Windows desktop. Another method is to press CTRL+ESC. (If a menu is displayed, you need to press ESC first.) Or you can choose the Switch To command from any application's Control menu.



The Task List buttons can be used to perform several functions:

Switch To	Switch To switches you to the selected application.
End Task	End Task quits the selected application.
Cascade	Cascade layers windows on your screen. You see the title of each window.
Tile	Tile resizes windows and arranges them side by side.
Arrange Icons	Arrange Icons rearranges application icons along the bottom of your desktop.
Cancel	Cancel closes Task List. Or you can close it by pressing ESC.

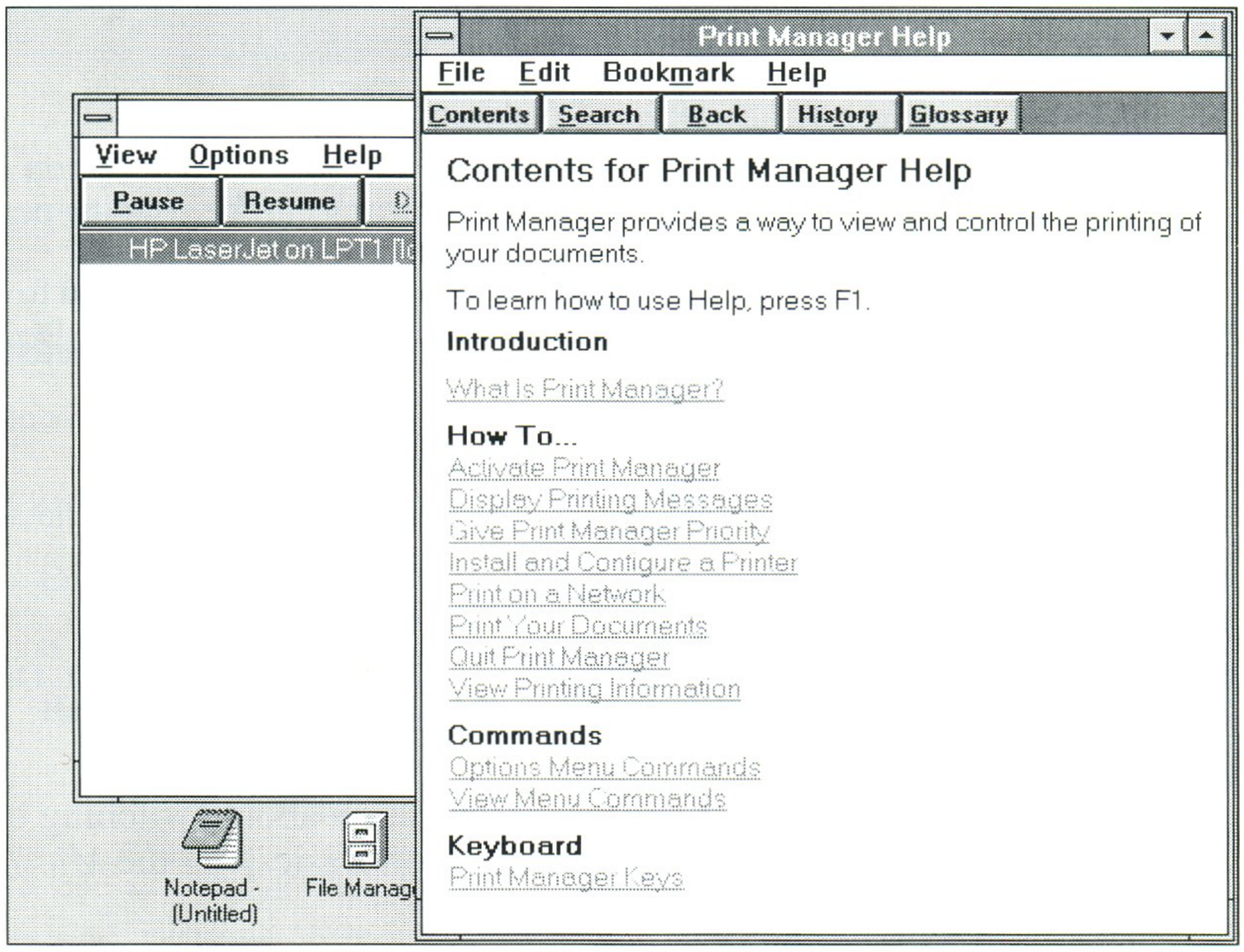
For more information about switching between applications, see Chapter 2, "Application Basics," in the *Microsoft Windows User's Guide*.

Help

Windows provides online Help to assist you in working with Windows. Some of the ways you can obtain Help are:

- Press the F1 key to see a list of Help topics for the application you are working in.
- In a dialog box that has a Help button, click the Help button (or press F1) to display information about working with the dialog box.
- Choose the Help menu in any application to display a list of Help commands to choose from.

The buttons near the top of the Help window can help you find the information you need.

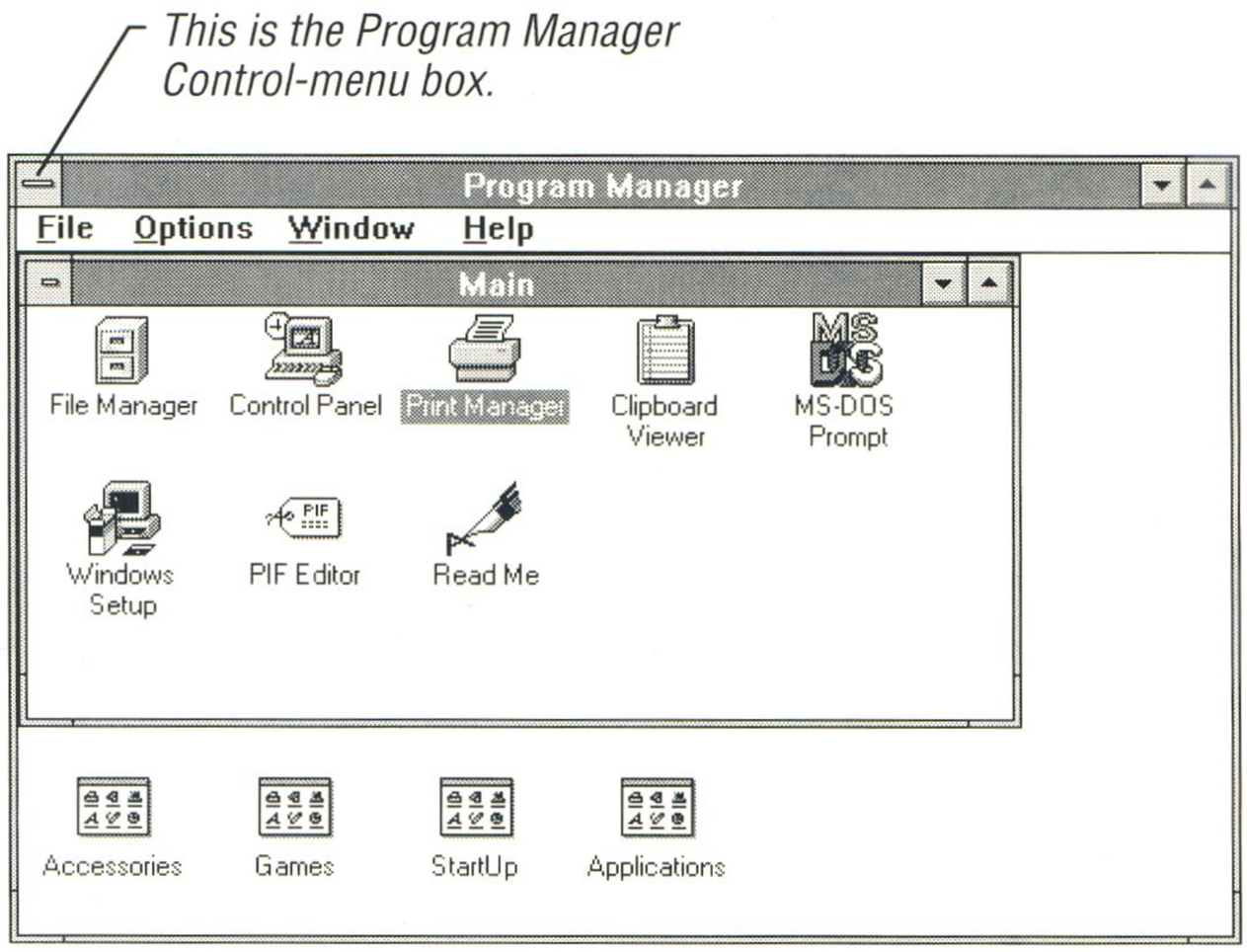


Contents	Contents displays a list of Help topics for an application.
Search	Search displays a dialog box where you specify a topic to search for.
Back	Back displays the previously viewed topic.
History	History displays a chronological list of all Help topics viewed during your current Windows session.
Glossary	Glossary displays a list of Windows terms and their definitions.

If you need to learn how to use Help, press F1 while the Help window is open. Or choose How To Use Help from your application's Help menu.

Quitting Windows

You can quit Windows by double-clicking the Control-menu box in Program Manager.



The Next Step

This chapter has provided a brief introduction to Windows. The *Microsoft Windows User's Guide* provides details on the features presented in this chapter. Also, you may want to use the Windows Tutorial that is available on your system. Instructions for running the Tutorial follow.

Running the Microsoft Windows Tutorial

The Windows Tutorial is an interactive, online application that teaches you the basics of using a mouse and Windows. To use the Tutorial, you need a mouse and a VGA (or better) monitor.

▶ To run the Tutorial from within Windows

Mouse

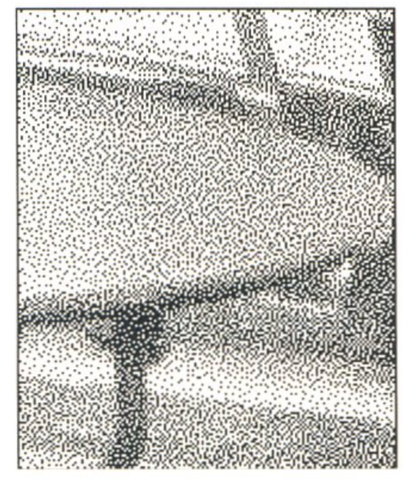
1. Switch to the Program Manager window by clicking it or by using Task List.
2. Click the Help menu, and then click the Windows Tutorial command.

Keyboard

1. Switch to the Program Manager window: Press and hold down ALT, and then press TAB repeatedly until "Program Manager" appears in the small window in the middle of your screen. Then release both keys.

   The Program Manager window appears.
2. Press ALT and then H to display the Help menu.
3. Press W. Or press the DOWN ARROW key to select the Windows Tutorial command, and then press ENTER.

Troubleshooting



Chapter 4

This chapter is designed to help if you run into trouble when using the Microsoft Windows operating system. Each section suggests steps you can take to solve the most common problems.

This chapter has the following sections:

- Setting Up Windows
- Using a Mouse
- Running Applications
- Linking and Embedding Objects
- Printing
- Managing Memory
- Using Serial Communications
- Using Terminal
- Using Windows with a Network
- Using Two Versions of Windows
- Before You Contact Product Support Services
- Microsoft Product Support Services

The section "Before You Contact Product Support Services" describes steps you should take before contacting Microsoft Product Support Services (PSS). In some cases, the steps might help you solve your problem. In other cases, the steps prepare you for the technician's questions.

Setting Up Windows

The following sections describe solutions to problems you might have when setting up Windows.

Your system locks up during the MS-DOS part of Setup.

The first part of the Windows Setup program runs with MS-DOS. (Later, Setup switches to Windows.) If the Setup program stops while still using MS-DOS, it may be because Setup was unable to correctly detect your hardware. To solve this problem, run Setup again by typing **setup /i**. This causes Setup to skip hardware detection and run Custom Setup, in which you specify your system settings. In the System Information screen, choose descriptions that match the hardware on your system.

Setup stops when switching from MS-DOS to Windows.

The first part of the Windows Setup program runs with MS-DOS. If Setup stops when switching from MS-DOS to Windows, it may be due to one of the following reasons:

- When you started Setup, your system already had an application in memory that sends output directly to your screen. An example is a network message service that notifies you when printing is complete. Be sure to close any such applications before starting Windows Setup.
- Setup was unable to correctly detect your hardware or software. You need to quit Setup and run it again, choosing the Custom Setup option. If possible, Setup indicates which hardware or software is causing the problem. Make sure the descriptions of hardware and software in the System Information screen match what you have on your system. If not, correct the settings.
- You are running the wrong version of MS-DOS. Windows 3.1 requires MS-DOS version 3.1 or later. To find out which version you are running, type **ver** at the MS-DOS prompt. If necessary, install a newer version of MS-DOS, restart your computer, and then run Windows Setup again.

- Your system has a memory-resident program (also known as a terminate-and-stay-resident program, or TSR) that is incompatible with Setup. Setup detects and notifies you about using certain programs. Read the file SETUP.TXT for information about using specific programs with Setup or Windows.

  SETUP.TXT is a text file located on Disk 1 of your Windows disk set. Programs are listed alphabetically in the file. To look at the file, use a text editor you have on your system, or use the following procedure.

▶ To view the SETUP.TXT file, using the MS-DOS prompt

1. Type the following at the MS-DOS prompt:

   more < setup.txt

   The file is displayed, one screen at a time.
2. To see the next screen, press the SPACEBAR.
3. To quit viewing the file, press CTRL+C.

You might need to remove from your CONFIG.SYS and AUTOEXEC.BAT files any command lines that specify memory-resident programs and then restart your computer. For more information, see "Before You Contact Product Support Services" later in this chapter.

The Setup program keeps prompting you for the same disk.

When you run the Setup program, you are prompted to insert disks one by one. If Setup doesn't recognize that you have inserted the disk you are being prompted for, it might be for one of the following reasons:

- A disk-cache program (such as SMARTDrive) is caching the floppy disk. To correct the problem, use a text editor to open the CONFIG.SYS or AUTOEXEC.BAT file, and then disable or remove the command line that specifies the disk-cache program.

  For this change to take effect, you must restart your computer (remove the Setup disk from the floppy disk drive first). Then run Setup again.
- The system did not receive the message that you changed the floppy disk. To correct the problem, add a **drivparm** command to your CONFIG.SYS file, and then restart your computer. For example, if

you are setting up Windows from a 5.25-inch, 1.2-MB floppy disk drive labeled A, you would add the following line to the CONFIG.SYS file:

drivparm=/d:0 /f:1

For this change to take effect, you must restart your computer (remove the Setup disk from the floppy disk drive first). See your MS-DOS documentation for more information about the **drivparm** command.

You have special hardware to set up with Windows.

To use your hardware with Windows, you install a *device driver*. A device driver is a file that instructs Windows how to communicate with your hardware. Windows includes drivers for most popular types of monitors, printers, and other devices.

If your hardware is on the Windows Hardware Compatibility List (supplied with Windows) or can emulate hardware on the list, Setup installs the devices automatically. Otherwise, Windows drivers for your hardware may be available from the following sources:

- Microsoft provides the Windows Driver Library (WDL), which contains device drivers made available after this version of Windows was released. The WDL is available on network services, including CompuServe, GEnie, Microsoft OnLine, various user-group bulletin-board services (BBSs on the APCUG network), and the electronic downloading service maintained by Microsoft (phone 206–637–9009). Users who do not have a modem may obtain disks by contacting Microsoft Customer Support Services at 1–800–426–9400.

  Note If your copy of Windows was purchased outside the United States, the package contains a subsidiary information card listing bulletin-board services (BBSs) from which you can obtain updated device drivers. The card also lists local subsidiary telephone numbers you can call to obtain drivers if no BBS is available or you cannot access a BBS.

- If the WDL does not include a driver for your hardware, contact your hardware manufacturer to find out whether a device driver is available that is compatible with Windows version 3.1.

Note CGA display drivers are no longer included with Windows. You can, however, obtain a CGA display driver from the WDL, as previously described in this section.

You receive a message about memory-resident programs.

The Setup program detects and warns you about some memory-resident programs that might not be compatible with Windows. For information about setting up and using specific memory-resident programs, see the SETUP.TXT file. SETUP.TXT is a text file located on Disk 1 of your Windows disk set. The programs are listed alphabetically in the file. To look at the file, use a text editor you have on your system, or use the procedure described in the section "Setup Stops When Switching from MS-DOS to Windows" later in this chapter.

Windows won't start after a successful Setup.

If you completed Setup but cannot start Windows, one of the following might be the cause:

- The wrong hardware is specified for your system. This might occur because you ran Express Setup, and Setup was unable to correctly detect your hardware; or because during Custom Setup, you chose the wrong hardware settings. From the Windows directory, type **setup** at the MS-DOS prompt. Make sure the hardware information is correct.
- Your system may be running memory-resident (TSR) programs that are incompatible with Windows. Setup detects and warns you about most of these programs; however, your system may have a program that Setup cannot detect.

  For more information about troubleshooting problems with memory-resident programs, see "Streamline the CONFIG.SYS and AUTOEXEC.BAT Files" later in this chapter.
- If Windows still won't start, run Setup again. Type **setup /i**, which causes Setup to skip hardware detection. This also runs Custom Setup, in which you specify your system settings. In the System Information screen, be sure to choose descriptions that match the hardware on your system. Then restart your system, and type **win** to start Windows.
- Try starting Windows by typing **win /s** (standard mode) or **win /3** (386 enhanced mode). If you can start Windows in standard mode, see the next section.

Windows runs in standard mode but not in 386 enhanced mode.

If you have an 80386 or 80486 computer and Windows can run only in standard mode, you may be able to correct the problem in one of the following ways:

- Make sure that your computer has at least an 80386 processor and enough memory to run in 386 enhanced mode. You should have at least 200K of free conventional memory, 1024K (1 MB) of free extended memory, and at least 2 MB of free disk space.

  If your system meets these requirements, try to start Windows in 386 enhanced mode by typing **win /3** at the MS-DOS prompt. Although you can force Windows into 386 enhanced mode if it has less than 1024K of extended memory, it is not recommended because Windows may run very slowly.

- Use the **EMMExclude** option when you start Windows, by typing **win /d:x** at the MS-DOS prompt. This excludes the adapter area from areas that Windows searches for unused address space. Typically, this is the area A000-FFFF. The search can cause conflicts with adapters that use this area.

  If using this command successfully starts Windows in 386 enhanced mode, you might want to add the **EMMExclude** command to your SYSTEM.INI file, as described in the procedure following this section.

- Use the **VirtualHDirq** option when you start Windows, by typing **win /d:v** at the MS-DOS prompt. This gives your hard disk—rather than Windows 386 enhanced mode—control over how hard-disk interrupts are processed.

  If using this command successfully starts Windows in 386 enhanced mode, you might want to add the **VirtualHDirq** command to your SYSTEM.INI file, as described in the following procedure.

▶ To add an EMMExclude or VirtualHDirq command to the SYSTEM.INI file

1. Using a text editor, open the SYSTEM.INI file, which is located in your Windows directory.

2. Find the [386Enh] section of the file, and type one of the following lines:

   EMMExclude=A000-FFFF

   VirtualHDirq=FALSE

3. Save your changes to the SYSTEM.INI file.
4. Type **win** to start Windows.

Note When you add the **EMMExclude** command to your SYSTEM.INI file, you are probably excluding more address space than is necessary. To find out a more precise amount of address space to exclude, you can use the Microsoft Diagnostics (MSD) program. To start MSD, type **msd** at the MS-DOS prompt. From the first screen, choose Memory. You should exclude any address space identified as "RAM" or "ROM." You might also be able to exclude address space identified as "Possibly Available."

You need to copy Windows files directly to your computer.

The files on the Windows Setup disks are compressed and are not usable until expanded. Usually, Setup and Windows Control Panel expand the compressed files as they are copied to your hard disk. In some cases, you may need to copy files directly from a Windows Setup disk without using Setup or Control Panel.

▶ To copy Windows files to your system and expand them

1. Copy EXPAND.EXE from Windows Disk 2 to your hard disk. (This program expands compressed files to a usable format.)
2. Insert in drive A (or another floppy disk drive) the disk containing the file you want to expand.
3. Type the following command at the MS-DOS prompt, and then press ENTER:

   expand *x*:*filename1* *y*:*windirectory**filename2*

   where *x* is the floppy disk you are copying from, *filename1* is the name of the compressed file you want to copy, *y* is the hard disk you are copying to, *windirectory* is the name of your Windows directory, and *filename2* is the file that will appear on your hard disk.

   The compressed file is expanded as it is copied to your hard disk.

When files are compressed, their extensions are renamed to end with an underscore. System files (.SYS) are named SY_ as compressed files. For example, MOUSE.SYS is named MOUSE.SY_, and HIMEM.SYS is named HIMEM.SY_. When you use Windows Setup to install these files, they are renamed with .SYS extensions.

If you use the **expand** command to copy .SY_ files to your hard disk, you must change their filename extensions to .SYS. You can use the MS-DOS **rename** command, or you can rename each file as you copy it from the Windows Setup disk by using the **expand** command. For more information about the **expand** command, see your MS-DOS documentation.

Using a Mouse

The following sections describe solutions to problems you might have when using a mouse with Windows. If you cannot use your mouse and need to use your keyboard with Windows, see Chapter 1, "Windows Basics," in the *Microsoft Windows User's Guide.*

The mouse won't work with Windows.

- If you are using a serial mouse, make sure you are using either the COM1 or COM2 serial port. You cannot use serial port COM3 or COM4 with a mouse in Windows. Examine your hardware to see which port the mouse cable is attached to. Then make sure Windows is set up correctly by choosing the Ports icon in Control Panel.
- Determine which hardware interrupt the mouse port is set to use and whether there is another device set to use the same interrupt. If there is an interrupt conflict with the serial or bus port that the mouse is connected to, the mouse won't work. For information about changing interrupt settings and determining which interrupts the mouse port and other hardware are using, see your mouse and hardware documentation.

The mouse pointer won't move.

- If the mouse pointer appears on your screen but won't move, choose the Windows Setup icon in the Main group to display a list of settings. Make sure the mouse you are using is listed here.

- If you are certain you are using the appropriate mouse driver, and the mouse pointer still won't move, check whether there is an interrupt conflict between the mouse port and another device. For information about determining which interrupt your mouse or other hardware is using, see the documentation supplied with your hardware.

The mouse pointer jumps around on the Windows screen.

If the mouse pointer jumps around rather than moving smoothly, you might have one of the following problems:

- There might be a system-hardware interrupt conflict. You need to set up the mouse so that it isn't using an interrupt that is being used by another device. For information about changing mouse interrupt settings, see the documentation supplied with your mouse.
- Your mouse needs to be cleaned. For instructions, see the documentation supplied with your mouse.

The mouse won't work with a non-Windows application running in a window.

If your mouse works with a non-Windows application running in a full screen but not with a non-Windows application running in a window, you could have one of the following problems:

- To use a mouse with a non-Windows application that is running in a window, you must set up the mouse driver before starting Windows. For a Microsoft mouse, you need to use either the MOUSE.SYS or MOUSE.COM driver, usually located in your Windows directory. Both drivers are provided with Windows. You set up MOUSE.SYS in the CONFIG.SYS file, or you set up MOUSE.COM in the AUTOEXEC.BAT file. For example, to specify the MOUSE.SYS device driver located in the WINDOWS directory on drive C, add the following command line to your CONFIG.SYS file:

  device=c:\windows\mouse.sys

  If you are copying these files from the Windows disks, you need to use the **expand** command. For more information, see "You Need to Copy Windows Files Directly to Your Computer" earlier in this chapter.

- The MS-DOS mouse driver you are using might not support the use of a mouse pointer for a non-Windows application running in a window. The MS-DOS mouse drivers, MOUSE.SYS and MOUSE.COM (provided with Windows version 3.1), do support the use of a mouse pointer for a non-Windows application running in a window.
- You might be using a display driver that does not support the use of a mouse pointer for a non-Windows application running in a window.

  If you are using a 16-color, 800×600-resolution display adapter with a display driver that was provided with a Windows version earlier than 3.1, you need to update the driver. Display drivers provided with the Windows version 3.0 Supplemental Driver Library should be updated as well. You need to use the standard Super VGA display driver provided with Windows version 3.1. You can install this driver, even after Windows is installed, by using the Setup program.

  If you are using a display driver that was provided with your display adapter, you might need to update the driver to one designed to work with non-Windows applications running in a window. Contact your display-adapter manufacturer for an updated display driver. For more information about using specific display adapters, view the README.WRI file by using Write (in the Accessories group).
- If you are using an IBM mouse with the IBM mouse driver version 1.0, you need to replace this driver. Version 1.0 of this driver was not designed to support non-Windows applications running in a window. Contact your dealer for an updated version of the mouse driver.

Running Applications

Applications usually run without problems. However, you might occasionally receive an error message when starting or running an application, or a key or function might not work properly. The following recommendations cover the most common problems.

You press a key, and the unexpected happens.

If a key combination doesn't work, it is usually because Windows or another running application is using the key combination for another purpose.

The following are some common problems and solutions:

- You use a key combination that should perform a function in an application, but it instead performs a Windows function (for example, you unexpectedly switch to another application).

  You are probably using a Windows shortcut key. You assign a Windows shortcut key to an application by using the Properties command on the File menu in Program Manager or by specifying a key combination in the application's program information file (PIF). Use the Properties command or check the application's PIF to find out whether you have assigned a Windows shortcut key to your application. For more information, see Chapter 3, "Program Manager," and Chapter 7, "Non-Windows Applications," in the *Microsoft Windows User's Guide.*

- You press a Windows shortcut key, such as ALT+TAB, but the Windows function is not performed.

  The key combination probably is reserved for a non-Windows application and no longer performs the Windows function. Check the PIF of the foreground application to determine whether a Windows key combination is reserved for that application.

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- If Windows is running in 386 enhanced mode and you hear a beep whenever you press a key while using a particular application, Windows might have suspended that application. This might happen, for example, if you try to run the application in a window but it cannot run in a window. If that is the case, press ALT+ENTER to return the application to a full screen. If the application does not respond to ALT+ENTER, you might be able to press CTRL+ALT+DEL to quit the application without having to restart Windows or your system.

386

- If Windows is running in 386 enhanced mode and you have chosen the Select or Mark command from the Control menu (the application's title bar will contain the word "Select" or "Mark"), Windows

is waiting for you to select information for transfer onto the Clipboard. To cancel the command, press the ESC key. To copy selected information onto the Clipboard, choose the Copy command from the application's Edit menu, or press the right mouse button.

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- If Windows is running in 386 enhanced mode and you have chosen the Scroll command from the Control menu (the application's title bar will contain the word "Scroll"), Windows is waiting for you to use the arrow keys to scroll through the information in the application's window. To cancel the Scroll command, press the ESC key.
- If you are using a language that has accented characters, you might not be able to use those characters when naming files. Before MS-DOS reads a filename, it shifts all the letters in the filename to uppercase. Some accented characters do not have valid uppercase characters.

Your application stops responding to the system.

- You can press CTRL+ALT+DEL to quit an application that has stopped responding to the system. Windows displays a message confirming your action. To continue, follow the instructions in the message.

  When you are using MS-DOS without Windows and you press CTRL+ALT+DEL, your computer restarts. When you press CTRL+ALT+DEL while using Windows, you can quit the application that has stopped responding, without having to restart your computer and Windows.
- You are running an earlier version of a Windows application that is incompatible with Windows version 3.0 or later. Contact the manufacturer for an updated version of the application.

Your Windows application doesn't work the way it did with Windows version 3.0.

Although most applications designed for Windows version 3.0 work with Windows version 3.1, there are a few exceptions. These applications are listed in the Help file APPS.HLP. This file also contains information about how to obtain an updated version of your application.

▶ To open and view the Help file APPS.HLP

1. From the Help menu in Program Manager, choose Contents.

   Help Contents for Program Manager appears.
2. From the File menu in Program Manager Help, choose Open.

   The Open dialog box appears.
3. From the list of files, select the APPS.HLP file.

   The Help file appears. The applications are listed alphabetically in the file.

Your application runs too slowly.

If your application runs too slowly, try one of the following solutions:

- Your system might be low on memory. If your hard-disk light blinks frequently, Windows is swapping information to disk to make room in memory for other information or is rereading information from the disk into memory. For information about making more memory available, see Chapter 14, "Optimizing Windows," in the *Microsoft Windows User's Guide.*
- You might need to set up a permanent swap file. If Windows is running in 386 enhanced mode and you run more than one application at a time or applications that use very large files, you should set up a permanent swap file. Do this by choosing the 386 Enhanced icon in Control Panel. When the 386 Enhanced dialog box appears, choose the Virtual Memory button. For more information, press the F1 key while using the dialog box, or see Chapter 14, "Optimizing Windows," in the *Microsoft Windows User's Guide.*

Your Super VGA screen isn't restored correctly.

If you use a Super VGA and the screen contents aren't restored correctly when you switch between Windows and a non-Windows application, you probably need to update your display driver. The Super VGA display driver provided with Windows version 3.1 supports most 16-color, 800×600-resolution display adapters. If it doesn't work correctly, contact the display-adapter manufacturer to find out whether there is a Windows version 3.1 display driver available for your display adapter.

You cannot take a snapshot of the screen.

If you cannot take a "snapshot" (bitmap) of an application screen, one of the following might be the cause:

- If you are running Windows in standard mode and trying to take a snapshot of a non-Windows application, the No Screen Exchange check box might be selected in the application's PIF. This option prevents you from copying information onto the Clipboard by using PRINT SCREEN or the ALT+PRINT SCREEN key combination. This option might be set to give the application enough memory to run. Try clearing this check box.
- If you are trying to take a snapshot of a non-Windows application by using the PRINT SCREEN or ALT+PRINT SCREEN key combination (usually Windows shortcut keys), these combinations might be reserved for the active application. Try clearing the corresponding Reserve Shortcut Key check boxes in the active application's PIF.
- If Windows is running in standard mode, the wrong Video Mode option button might be selected in the application's PIF. Try selecting a higher-resolution video mode.

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- If Windows is running in 386 enhanced mode, more memory might be required. Quit some applications to free memory. For more information, see "Managing Memory" later in this chapter.

You cannot paste information into a non-Windows application.

If you cannot paste information from the Clipboard into a non-Windows application, one of the following could be the cause:

- The information might not be in text format. Windows cannot paste graphics into a non-Windows application. Try saving the information you want to paste as a separate file and then opening the file by using the non-Windows application.

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- A non-Windows application might not be able to accommodate the fastest pasting method. If Windows is running in 386 enhanced mode, the Allow Fast Paste check box in the application's PIF is usually selected, because most applications can accommodate the fastest pasting method. However, if the application cannot use the fastest method, it might not respond when you try to paste into it. Try clearing the Allow Fast Paste check box in the application's PIF.

You cannot change the font size for a non-Windows application.

- If you cannot change the font size for a non-Windows application running in a window, it's probably because the application is running in graphics mode. You can change font sizes only when the application is running in text mode. With some non-Windows applications, you can choose which mode the application runs in. To find out whether your non-Windows application can run in text mode, see the documentation included with your application.
- You might be using a display driver that doesn't provide the capability of changing fonts for a non-Windows application running in a window. If you are using a 16-color, 800×600-resolution video graphics adapter (Super VGA), make sure you are using the Super VGA display driver provided with Windows version 3.1. This driver supports most Super VGA display adapters. If this driver doesn't work, contact the display-adapter manufacturer to find out whether a Windows version 3.1 display driver is available.
- If you are using a display driver that doesn't provide the capability of changing fonts for a non-Windows application running in a window, try including the following line in the [NonWindowsApp] section of the SYSTEM.INI file:

  FontChangeEnable = 1

  For more information about modifying the SYSTEM.INI file, view the SYSINI.WRI file by using Windows Write (in the Accessories group).

Note This setting does not work for all displays. In some cases, specifying this setting causes the mouse pointer to be displayed incorrectly.

Your system stops responding or quits unexpectedly.

If Windows or your computer stops responding; the application or Windows quits unexpectedly; or your computer restarts unexpectedly, one of the following might be the cause:

- You are running an earlier version of a Windows application that is incompatible with Windows version 3.0 or later. Contact the manufacturer for an updated version of the application.

- You are using hardware that is incompatible with Windows. For more information about hardware compatibility, see the Hardware Compatibility List supplied with Windows, or use Write (in the Accessories group) to view the README.WRI file. Sometimes you can resolve hardware incompatibility by adjusting settings in your SYSTEM.INI file. For more information about SYSTEM.INI, use Write to view the SYSINI.WRI file.

You receive a message that the registration database is corrupted.

If you have problems such as the following, your registration database may be corrupted:

- You try to open or print a file that is associated with an application, and you receive a message that the association information is incomplete.
- While working with linked or embedded objects, you receive a message that the server is not registering properly.
- In File Manager, you choose the Associate command and there are no entries in the list of files in the Associate dialog box.

If your registration database is corrupted, you must delete the registration database and then recreate it.

▶ To restore your registration database

1. Quit Windows.
2. Delete the REG.DAT file (located in your Windows directory).
3. Restart Windows.
4. Start Registration Info Editor by opening File Manager and then selecting the REGEDIT.EXE file (located in your Windows directory).
5. From the File menu, choose Merge Registration File.

   The Merge Registration dialog box appears.

6. In the Merge Registration File, select the SETUP.REG file, and then choose the OK button. (The SETUP.REG file is located in the SYSTEM directory where you set up Windows.)
7. Search for *.REG files on drive C by using the Search command on the File menu in File Manager.
8. Double-click each .REG file (or select it, and then press ENTER).
9. Repeat steps 6 through 8 for each drive on your system.

Note You may need to contact your software manufacturer if problems still persist when running a Windows application.

Linking and Embedding Objects

The following sections describe solutions to problems you might encounter when linking and embedding objects by using Windows applications that support object linking and embedding.

You receive a message that the server is unavailable.

The server application must be available when you try to create, edit, play, or update an object in a destination document. A server application cannot respond if it is performing some action (such as printing or making calculations), if the cursor is in a field waiting for information, or if a dialog box is open.

Use the following guidelines to solve the problem:

1. Wait a short while to determine whether the server is going to become available to respond to your request. If it becomes available, the message goes away and your request is processed.
2. If the server application does not become available, you may be able to choose the Cancel button in the dialog box to cancel the request.
3. If you do not want to or cannot cancel the request, determine which server application is unavailable.

   Switch to the server application, and complete or cancel the action that is causing the application to be unavailable.

You choose an object type from the Insert Object dialog box, but the application doesn't open.

If you choose an object type from the Insert Object dialog box and the application doesn't open, it means Windows cannot find the application.

Use the following checklist to solve the problem:

- Make sure the application that creates this object type hasn't been deleted from the computer. For example, Paintbrush (PBRUSH.EXE) needs to be on your computer before you can open a Paintbrush Picture object type.
- If the application has been moved from the location specified in the registration database, make sure the directory containing the application is included in the path in your AUTOEXEC.BAT file.
- Try reinstalling the application.

You get different results each time you use the Paste command.

When you use the Paste command, the contents of the Clipboard are either inserted or embedded into the document. The result is determined by the type of application you used to create the information on the Clipboard.

If it is a server application, one that can supply objects for object linking and embedding, the information may be embedded when you choose the Paste command. When the information is embedded, you can activate the information or edit it from within the document.

If the application used to create the information on the Clipboard does not support object linking and embedding, the information is simply inserted when you choose the Paste command and cannot be edited or activated from within the document.

A linked sound object updates automatically even though it is set to update manually.

When you create a link, you are inserting into the destination document a reference to the source document that contains the linked object. A presentation of the object is placed in the destination document to

identify the link. Sometimes, depending on the type of linked information, this image may be the same as the information in the source document. The Manual or Automatic Update setting controls when this image is updated in the destination document only.

The Picture option in the Content window of Object Packager is unavailable.

The Picture option in the Content window displays a snapshot view of the object. Picture view is available only when the object was created with a server application and when the Clipboard is used to transfer the object into Object Packager.

If you use the Import command on the File menu to load a document into Object Packager or you copy onto the Clipboard information created by using an application that is not a server, the Picture option is not available.

A linked object is not updating.

Under certain circumstances, a linked object must be manually updated before the visual presentation of the linked object in the destination document is updated, regardless of whether it is an automatic or manual link. This is true for links to documents that contain text, spreadsheets, and pictures because these linked objects are represented in the destination document by images that reproduce the information in the source file. This is not true for links to sound and animation files because these types of links are represented by icons and not the contents of the linked document.

For example, suppose you have a destination document open that contains a link to a Paintbrush document, and you have the source document open in Paintbrush. When you make changes to the source document in Paintbrush, the visual presentation of the Paintbrush object in the destination document is not updated with the changes you are making. You must save the document in Paintbrush and then update the linked object in the destination document to see the updated object.

▶ To update a link

1. Select the linked object in the destination document.
2. From the Edit menu, choose Links.
   The Links dialog box appears.
3. Choose the Update Now button.
4. Choose the OK button.

The Paste command in Cardfile is not available, yet there is information on the Clipboard.

You must first choose the Picture command from the Edit menu before you can use the Paste, Paste Link, and Paste Special commands in Cardfile.

A check mark appears next to the Picture command when it is in effect.

The Paste Link command is not available, yet there is information on the Clipboard.

You can only create a link to information in a saved file, so the Paste Link command is available in the destination document's application only when you copy information from a saved file onto the Clipboard.

Save the file before copying information onto the Clipboard. Then you have the choice of using the Paste command to embed the information or the Paste Link command to create a link to it.

Printing

The following sections describe common printer problems and offer suggestions for correcting the problems. When there are suggested steps to follow, you should try to print after you complete one of the steps. If you can print from Windows, you've solved the problem. If not, try the next step.

Your printer does not print.

When a printer cannot print, the cause is often mechanical. For example, the printer could be offline, turned off, or disconnected. Use the following checklist:

- Is the printer plugged in, turned on, and online?
- Do you have the correct cable for your printer, and is it properly connected? For example, if you are using a Hewlett-Packard plotter, you need to use a Hewlett-Packard plotter cable. If you suspect the cable is the problem, you may want to borrow a cable that is working with another computer and printer.
- Does the currently selected printer in the application you are printing from match the printer you are printing to?
- Are the printing options set correctly, and have you chosen the correct port for the selected printer? For more information, see Chapter 6, "Print Manager," in the *Microsoft Windows User's Guide.*
- When you are using a serial printer and you choose the Ports icon in Control Panel, does the information in the Settings dialog box match those required by your printer? For more information, see Chapter 5, "Control Panel," in the *Microsoft Windows User's Guide.*
- Do you need to change the ribbon, install a print wheel or cartridge, or add paper? Choose the Print Manager icon in the Main group. Depending on the printer you are using and the commands you have chosen from the Options menu, a message might appear that describes the problem.
- If you are printing to a network printer, have you connected to the network printer?
- Can you print from Notepad and Write? If so, the problem is likely with the application you are using. Consult the application's documentation, or contact the software manufacturer.
- If you are using a switchbox to switch between different printers, try clearing the Fast Printing Direct To Port check box in the Connect dialog box of the Printer option in Control Panel. (You open the Connect dialog box by choosing the Printer icon in Control Panel and then choosing the Connect button.) If this doesn't work, try printing directly to the printer without using the switchbox.

If you still cannot print, try copying a small text file from MS-DOS directly to the port your printer is connected to. For printers that accept ASCII codes (such as dot-matrix printers) and PCL printers

(Hewlett-Packard DeskJet, LaserJet, or compatible printer), you could type the following at the MS-DOS prompt, specifying the directory where your Windows files are located, and the port you are using:

copy c:\windows\setup.txt lpt1:

The output from the **copy** command (in this case, the contents of your SETUP.TXT file) is sent to the printer instead of the screen. If the file doesn't print, the problem is not with Windows. For more information, see the documentation supplied with your printer.

For PostScript printers, try copying the file TESTPS.TXT to the port you are using. This file was copied to your hard disk when you installed the PostScript printer driver. For example, if your Windows system files are stored in a directory named C:\WINDOWS\SYSTEM (the default directory name), you would type the following:

copy c:\windows\system\testps.txt com1

This command line prints a list of communications settings. Be sure your settings match the list.

You can print from MS-DOS but not from Windows.

If you can print from MS-DOS but not from Windows, there may not be enough space for Windows to store temporary files. (Windows creates temporary files when printing, even if you are not using Print Manager.)

► To see how much space exists for temporary files

1. At the MS-DOS prompt, type **set** to see what directory the TEMP environment variable is set to use.
2. If there is no TEMP variable listed, define one. For example, to set the TEMP variable to use a directory named TMP located on drive C, add the following line to your AUTOEXEC.BAT file:

   set temp=c:\tmp

   You need to restart your computer after making changes to the AUTOEXEC.BAT file. Windows uses the root directory of your startup drive to store temporary files if there isn't one defined.

3. If there is a TEMP variable listed, make sure the specified directory exists. If it doesn't exist, you need to create it or reset the value of TEMP to specify an existing directory.
4. Move to the directory specified by the TEMP variable.
5. Type the **dir** command to see how much space is available. Windows needs at least 2 MB of free disk space in which to store temporary files.
6. If you had to change any of these settings, try printing again.

If you still cannot print, step through the following checklist:

- Check the printer cable. Windows applications require that all pin connectors are functioning, whereas some non-Windows applications do not. Try using a cable that you know is a working cable.
- If you are using a serial printer, make sure you do not have an interrupt conflict. A mouse might be on the same interrupt as the serial port being used for printing.
- Make sure you are not using a serial port to connect to a network printer. Windows supports network-printer connections on parallel (LPT) ports only.
- If you are using a printer that isn't listed during Windows Setup (or in the Printers dialog box in Print Manager or Control Panel) and are trying to emulate a standard printer, make sure you have chosen the correct printer to emulate. See your printer documentation.
- Try printing without using Print Manager. To turn off Print Manager, choose the Printers icon in Control Panel, and then clear the Use Print Manager check box.
- If you are printing to LPT1, try printing to the LPT1.DOS file instead. To specify the LPT1.DOS file, choose the Printers icon in Control Panel. When the Printers dialog box appears, choose the Connect button. Choose LPT1.DOS from the Ports list. If LPT1.DOS does not appear in the list, you need to add it to the list of ports in the ports section of the WIN.INI file. For more information, view the WININI.WRI file by using Write (in the Accessories group).

The page prints but is formatted incorrectly.

If the pages of a document are formatted incorrectly, the margins are incorrect, the document contains extra lines, or the document is paginated incorrectly, use this checklist:

- If you haven't already read the PRINTERS.WRI file provided with Windows, you should determine whether it contains information specific to your printer. You can view this file by using Write (in the Accessories group).
- Make sure your printer is capable of printing the formats you specified in your application. Pay special attention to your printer's capabilities when selecting fonts and point sizes. For more information about the font you specified in Windows, start Write, and then choose Fonts from the Character menu. The Font dialog box appears, providing information about the fonts that are available with Windows.
- Make sure you specified the correct settings when you configured your printer. When configuring a printer, you can control settings such as margin size, number of lines per printed page, paper orientation, and number of dots per inch. Choose the Printers icon in Control Panel. In the Printers dialog box, select the printer you are using, and then choose the Setup button.
- If your printer has hardware switches that set page length or line length, make sure you've chosen the correct settings. (For information, see your printer documentation.) For example, on a Hewlett-Packard LaserJet printer, you would set the number of lines per printed page to a maximum of 66.
- If your printer has a hardware switch that inserts an automatic linefeed at each carriage return, it should be set for carriage returns only. For more information, see your printer documentation.
- Determine whether the formatting problems are consistent by printing the same file twice. If the two printouts look different, you may be having problems sending printing information through the port.

Your printer output is garbled.

If you can print your document, but it is unreadable or contains extra characters, use this checklist:

- Make sure the correct printer is selected as the default printer. For more information, see Chapter 6, "Print Manager," in the *Microsoft Windows User's Guide.*
- If your printer accepts font cartridges, make sure you select the correct cartridge when you set the printing options. If the wrong font cartridge is selected, the printer may insert stray characters at the beginning of lines. For more information, see Chapter 6, "Print Manager," in the *Microsoft Windows User's Guide.*
- If you have a serial printer, make sure the settings for the printer port match those required by your printer. Choose the Ports icon in Control Panel, and then choose the Settings button. Lowering the baud rate might solve the problem.
- You may be using a printer that isn't listed during Windows Setup (or in the Printers dialog box in Print Manager or Control Panel). If so, you are probably trying to use your printer to emulate a standard printer. Few printers are 100-percent accurate when emulating industry-standard printers. Often, fonts are not printed accurately. Try emulating a different type of printer. You could also contact the printer manufacturer to find out whether a Windows printer driver is available for your printer.
- The printer buffer may be retaining garbled information. Try turning the printer off, waiting a few seconds, and then turning it on again.
- The printer cable may be faulty. Verify that you have the correct cable and that it is functioning.

As a last resort, try installing the Windows Generic/Text Only printer-driver file to see how it works with your printer. You could also contact your printer manufacturer or dealer to determine whether there is a problem with your printer. For information about installing printer drivers, see Chapter 5, "Control Panel," in the *Microsoft Windows User's Guide.*

The fonts on your screen and the fonts that print are different.

A font set is a group of letters, numbers, symbols, and punctuation marks with the same design. Screen fonts display information in windows and dialog boxes. Printer fonts are part of the printer driver or are in the form of cartridge fonts and soft fonts. Many printer drivers, cartridge fonts, and soft fonts have matching screen fonts so that the fonts on your screen look the same as those you print. If matching fonts are not available, Windows uses a font that looks the most like the printer font being used. Sometimes there isn't a font that looks the same.

If you use TrueType fonts, Windows and Windows applications use the same fonts, and fonts appear the same on the screen as they do when printed. TrueType fonts are installed when you set up Windows.

▶ To find out whether TrueType fonts are available

1. In the Control Panel window, choose the Fonts icon.

   The Fonts dialog box appears.

2. Choose the TrueType button.

   The TrueType dialog box appears.

3. Note whether the Enable TrueType Fonts check box contains an X. If it does, TrueType fonts are available and can be used in your documents.

To view available fonts, choose the Write icon in the Accessories group, and then choose the Fonts command from the Character menu. The Font dialog box appears, displaying samples of various fonts. The TrueType fonts have a TrueType icon next to them, and printer fonts have a printer icon. Plotter and screen fonts have no icon next to them.

You cannot print TrueType fonts on your laser printer.

When you are using a laser printer, TrueType fonts are listed in your application as a selectable font only if you are using a Windows version 3.1 printer driver. Windows version 3.1 printer drivers provide the necessary information for printing TrueType fonts. If you cannot print

TrueType fonts, the printer driver you are using may not be a Windows version 3.1 printer driver. Contact your printer manufacturer to find out whether a Windows version 3.1 printer driver is available for your printer or whether one of the printer drivers supplied with Windows can work with your printer.

Your laser printer does not print your cartridge or soft fonts.

If you install a font cartridge or soft fonts for your laser printer, but the printer doesn't print these fonts, use this checklist:

- Make sure the printing-option settings for your printer are correct and that you have selected the correct cartridge from the Cartridges list in the Setup dialog box. (For information, see "Setting the Printing Options" in Chapter 6, "Print Manager," in the *Microsoft Windows User's Guide.*)
- If you are using a font cartridge, make sure it is all the way in its slot. (Turn off the printer before checking this.) You may need to press firmly on the cartridge until it pops into the slot.
- If you are using soft fonts, make sure they are properly installed. (For information, see the installation kit provided with your soft fonts.)
- If your soft fonts are installed as permanent, perhaps the printer was turned off or reset. Try sending the soft fonts to the printer again.
- You may be using too many soft fonts. Printer drivers can support a limited number of soft fonts. Generally, PostScript printer drivers have a limit of about 170 soft fonts. PCL printer drivers generally have a limit of 250 soft fonts.

  The number of soft fonts you can use is also limited by the maximum size of the WIN.INI file. The WIN.INI file can be no larger than 64K. If the file is full, you cannot specify any additional soft fonts. One way to minimize the size of the WIN.INI file is to shorten the directory paths of the soft fonts. You can do this by moving the soft-font files closer to the root of the directory structure and then specifying these shorter paths in the WIN.INI file.

  You can also try installing fewer fonts or installing them as temporary fonts, if appropriate. For more information, see your printer documentation or contact your printer manufacturer.

- If you have changed port connections since installing soft fonts, you need to reinstall the soft fonts for the new port. If you are using the Hewlett-Packard LaserJet and DeskJet family of printers, choose the Printers icon in Control Panel, and choose the Setup button in the Printers dialog box. Then use the Fonts button in the Print Setup dialog box to copy soft fonts from one port to another.

The printer loses text.

- If you are using a parallel printer and an LPT port, the cable could be faulty. Try using a new cable of the same type.

If you have a serial printer and it prints the document but loses blocks of text, you might have a flow-control (also called handshake) problem with your serial port.

To check for a flow-control problem:

- Try lowering the baud rate.
- Make sure all communications settings (baud rate, data bits, parity, stop bits, and flow control) are set the same in Windows, in MS-DOS, and on the printer. The most common values for these settings are 9600 baud, 8 data bits, no parity, 1 stop bit, and Xon/Xoff flow control.

  You can change these settings in Windows by choosing the Ports icon in Control Panel and then choosing the Settings button. You can also change these settings in MS-DOS by using the **mode** command. For information about **mode** command-line options, see your MS-DOS documentation. For information about settings on the printer, see your printer documentation.

If the printer is still losing text, make sure all the manual switches on your printer are set as described in your printer documentation. If you are using a network printer, make sure you are using network software that works with Windows. For more information, see the NETWORKS.WRI file provided with Windows. You can view this file by using Write (in the Accessories group).

Only part of a page prints.

If your printer prints only part of your document, use the following checklist:

- The most common cause of this problem is insufficient memory in the printer. It is recommended that you add more memory to the printer. If you are printing graphics, try using a lower print resolution. You can try printing a page of text to confirm that you are running out of memory because you're printing graphics.
- Make sure the paper size you chose when configuring the printer matches the paper size loaded in the printer.
- Make sure you have selected the appropriate memory setting in the printer-driver dialog box. Make sure you haven't specified more memory than your printer actually has.

  To view this dialog box, choose the Printer Setup command in Print Manager.

Paintbrush graphics are too small when printed.

If you are using Paintbrush and the printed image is much smaller than you expected, use the following checklist:

- From the File menu in Paintbrush, choose Print. Make sure the Use Printer Resolution check box is cleared in the Print dialog box. Also, check the scaling factor. If a small scaling factor is specified, the printer output is small.
- From the View menu, choose View Picture to see how the image appears on the page. You may need to adjust the position.
- From the Options menu, choose Image Attributes to make changes to the width and height of the image.

Your PostScript printer runs out of memory.

Occasionally when trying to print a file, you might see a message indicating that the printer is out of memory.

If you are using a PostScript printer and the document you are trying to print includes soft fonts, try using TrueType or printer fonts instead. (For more information, see Chapter 6, "Print Manager," in the *Microsoft Windows User's Guide*.)

You can also try changing some of the options in the Advanced Options dialog box.

▶ To change a PostScript printer's options

1. In the Main group, choose the Print Manager icon.
2. From the Options menu, choose Printer Setup.

   The Printers dialog box appears.
3. From the list of installed printers, select the printer you are using.
4. Choose the Setup button.

   The Setup dialog box appears.
5. Choose the Options button.

   The Options dialog box appears.
6. Choose the Advanced button.

   The Advanced Options dialog box appears.
7. In the Send To Printer As list, make sure Adobe Type 1 is selected. This option causes the driver to use outline fonts for large point sizes, and bitmaps for small point sizes.
8. Make sure the Clear Memory Per Page check box is selected. This option causes the driver to clear the printer's memory after printing each page.
9. Make sure the Use Substitution Table check box is selected. This option causes the driver to use a built-in printer font already in the printer's memory instead of using a new font. Make sure you select a printer font to use in place of the TrueType fonts in your document. To do this, choose the Edit Substitution Table button, and then supply the necessary information in the Substitution dialog box.

If you need help working with the Advanced Options or the Substitution dialog box, choose the Help button or press F1 while using the dialog box.

If a problem still exists after completing this procedure, consider adding more memory to your printer. If your printer still runs out of memory when printing, there is a problem with the driver or printer. For more information, contact your printer manufacturer.

You receive a message that the printer is not responding.

When printing files, you may receive the following message from Print Manager: "The printer on LPT1 is not responding. Check the printer or increase the Transmission Retry value in the Printer Connect dialog box, and then resume the print queue."

You might receive this message if you are using PostScript printer cartridges; it is most common when printing graphics with these cartridges. When the printing process takes too long, it appears to Windows that a printer is not responding. If you receive this message, go through the following procedure to change the Transmission Retry setting (and increase the value, in seconds).

▶ To change the Transmission Retry setting

1. In the Main group, choose the Print Manager icon.
2. From the Options menu, choose Printer Setup.

   The Printers dialog box appears.
3. Select the printer you are using.
4. Choose the Connect button.

   The Connect dialog box appears.
5. In the Transmission Retry box, type a larger value (start by doubling the current value).

Managing Memory

The following sections describe solutions to problems you encounter when managing memory in Windows. For more information about managing memory, see Chapter 14, "Optimizing Windows," in the *Microsoft Windows User's Guide.*

You receive an out-of-memory message.

If you receive an out-of-memory message when you try to start an application, you can free memory in a number of ways, including the following:

- Free some memory before starting Windows. You may be able to do this by modifying your CONFIG.SYS and AUTOEXEC.BAT files to eliminate any memory-resident software that isn't needed by all applications. For information about how to do this, see Chapter 14, "Optimizing Windows," in the *Microsoft Windows User's Guide.*
- Close any applications you aren't using.

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- Run non-Windows applications in a full screen instead of a window (386 enhanced mode only). If a non-Windows application is running in a window, you can switch it to a full screen by pressing ALT+ENTER while it is the active application.
- Reduce Windows applications to icons. Many applications use less memory when minimized than when running in a window. To reduce an application to an icon, click the Minimize button in the upper-right corner of the window. Or bring the application to the foreground, press ALT+SPACEBAR to open the Control menu, and choose Minimize.
- Clear or save the Clipboard contents. For information about using the Clipboard, see Chapter 2, "Application Basics," in the *Microsoft Windows User's Guide.*
- If you are using a desktop wallpaper, set the desktop wallpaper to None or use a pattern (a pattern uses less memory than wallpaper). For more information, see Chapter 5, "Control Panel," in the *Microsoft Windows User's Guide.*
- If you are trying to run a non-Windows application, change its PIF options. Descriptions of PIF Editor options follow this section. For more information about PIF options, see Chapter 8, "PIF Editor," in the *Microsoft Windows User's Guide.*

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- If you are trying to run more than one non-Windows application at a time (in 386 enhanced mode), use PIF Editor to change the multitasking options, Background Priority and Foreground Priority. For more information about these options, see Chapter 8, "PIF Editor," in the *Microsoft Windows User's Guide.*

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- If Windows is running in 386 enhanced mode, set the PIF for each non-Windows application so that the application does not run when it is in the background. When the Execution Background setting is

not selected, the non-Windows application does not run when it is in the background. This may temporarily free up memory.

- Make sure Windows has enough available hard-disk space to create and use swap files. For information about how Windows uses swap files, see Chapter 14, "Optimizing Windows," in the *Microsoft Windows User's Guide.*

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- If possible, set up a permanent swap file. If Windows is running in 386 enhanced mode, you can do this by choosing the 386 Enhanced icon in Control Panel and then choosing the Virtual Memory option button when the dialog box appears. For help working with this dialog box, press F1 or see Chapter 14, "Optimizing Windows," in the *Microsoft Windows User's Guide.*

Freeing Memory by Using PIF Editor: Standard Mode If Windows is running in standard mode and you receive an out-of-memory message when trying to run a non-Windows application, first try the techniques listed in the preceding section. If you still get an out-of-memory message, consider changing the following PIF options. Choose the PIF Editor icon in the Main group to open PIF Editor. (If you upgraded from Windows version 3.0, PIF Editor remains in the Accessories group.)

Option	Suggested change
Video Mode	Under Video Mode, select the Text option button to reduce the amount of memory Windows sets aside to display the application. This makes more memory available to the application. However, if you change modes while using the application, you might not be able to switch from the application.
Memory Requirements	If Windows displays an out-of-memory message when you try to start the application, reduce the amount specified in the Memory Requirements: KB Required box. If the application starts but subsequently displays an out-of-memory message, you might need to free more memory before starting Windows. For information, see Chapter 14, "Optimizing Windows," in the *Microsoft Windows User's Guide.*

Option	Suggested change
XMS Memory	If the application does not need extended memory, make sure that XMS Memory: KB Required and XMS Memory: KB Limit are set to 0. This prevents the application from taking up memory that another application could use.
No Screen Exchange	Select this check box to prevent Windows from allocating memory when you copy information onto the Clipboard by using PRINT SCREEN or ALT+PRINT SCREEN. This makes more memory available to the application. However, you cannot take a "snapshot" (bitmap) of the non-Windows application screen.
Prevent Program Switch	Select this option to make more memory available to the application. Windows makes more memory available by preventing you from switching from the application. When this option is selected, you have to quit the application to return to Windows.

Freeing Memory by Using PIF Editor: 386 Enhanced Mode

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When Windows is running in 386 enhanced mode, Windows applications and non-Windows applications share memory resources. The more memory that is allocated to one application, the less memory there is available to others. If you receive an out-of-memory message when trying to start an application, first try the techniques described earlier in the "You Receive an Out-of-Memory Message" section.

If you still receive an out-of-memory message, try changing the PIF for the non-Windows application. You can free memory for an application by changing the following PIF settings. Choose the PIF Editor icon in the Main group to open PIF Editor. (If you upgraded from Windows version 3.0, PIF Editor remains in the Accessories group.)

Option	Suggested change
Video Memory	Under Video Memory, select the Text option button if you plan to use only text mode while running the application. Text mode requires less memory than graphics mode. Clear the Retain Video Memory check box in the Advanced Options dialog box to free memory.
Memory Requirements	If Windows displays an out-of-memory message when you try to start the application, reduce the amount specified in the KB Required box. If the application starts but subsequently displays an out-of-memory message, increase the amount specified in the KB Required and KB Desired boxes. (An application might also run out of memory if it doesn't have enough extended or expanded memory. If you suspect this is the case, try increasing the amounts in the XMS Memory and EMS Memory boxes.)
Display Usage	Select the Full Screen option button instead of Windowed. Running an application in a window requires more memory.
Execution	Select the Exclusive check box to suspend other applications while this application is in the foreground. This might make more memory available to the application, but it prevents other applications from running in the background.

If you still receive an out-of-memory message after changing the application's PIF, try changing the PIFs for other applications you plan to run at the same time.

You can free additional memory for a non-Windows application by changing the PIF settings for other applications, as described in the table on the following page.

Option	Suggested change
Memory Requirements	Reduce the amount specified in each application's KB Desired box. (Do not reduce it so much that other applications cannot run effectively.)
Display Usage	Select each application's Full Screen option button.
Execution	Clear other applications' Background check boxes to prevent them from running in the background. This makes more memory available to the application you want to run but prevents the other applications from running at the same time. You might want to do this to prevent particular applications from running in the background. If you want to prevent all applications from running in the background, it is easier to select the foreground application's Exclusive check box.
Lock Application Memory	Clear each application's Lock check box (Lock Application Memory, XMS Memory: Locked, and EMS Memory: Locked) to free memory. This might make more memory available to the application you want to run but also might slow down the applications for which you clear the Lock check box.

For more information about freeing memory, see Chapter 14, "Optimizing Windows," in the *Microsoft Windows User's Guide.*

Using Serial Communications

With Windows, you can have serial communications on serial ports COM1 through COM4. The following sections describe solutions to problems you might have when using serial communications.

You cannot access a serial port.

If Terminal or another Windows communications application cannot access a modem or other device connected to a serial port, use the following checklist to determine the problem.

- Determine whether another application is preventing access to the port even though it is not actively using it. If so, close the application so that other applications can access the serial port. For more information about how non-Windows applications compete for serial devices (device contention), see Chapter 7, "Non-Windows Applications," in the *Microsoft Windows User's Guide.*
- Make sure Windows is using correct base port address and hardware interrupt (IRQ) settings for the serial port you are trying to use. For instructions on how to specify these settings, see Chapter 5, "Control Panel," in the *Microsoft Windows User's Guide.*

The computer locks up when you try to access a serial port.

When a serial device attempts to use a hardware interrupt (IRQ) or memory address that is being used by another device, your computer can lock up. If you encounter this problem, determine whether one of the following is the cause:

- Serial ports COM1 and COM3 are often set to use interrupt IRQ4, and serial ports COM2 and COM4 are often set to use interrupt IRQ3. If you are using these ports and your computer locks up, try including the following setting in the [386Enh] section of the SYSTEM.INI file:

  COMIrqSharing = true

  Note This setting works only for some systems. Many serial communications adapters do not allow these ports to be used simultaneously, regardless of the setting in the SYSTEM.INI file.

- Some 8514/A display adapters and some network adapters conflict because they use the common address for serial port COM4 (2E8). If you are using either of these two devices, determine whether they are conflicting with your serial port.

For information about which interrupts your device uses and how to change interrupt settings, see the documentation supplied with the device. For more information about specifying interrupt and address settings for your serial devices and ports in Windows, see Chapter 5, "Control Panel," in the *Microsoft Windows User's Guide.*

Errors occur during high-speed communications.

The fastest communications speed possible in Windows is dependent on many factors, including your serial device, computer speed, communications software, and other programs (or applications) running on your system. If you have problems during communications transmissions at high speeds (9600 baud and higher), use the following checklist:

- Close or adjust the background-execution priority for any non-Windows applications running in the background. Such an application could prevent the active communications application from receiving information fast enough. For information about adjusting settings for non-Windows applications, see Chapter 7, "Non-Windows Applications," in the *Microsoft Windows User's Guide*.
- Make sure the computer is running at its fastest possible speed. Some computers may run at slower speeds to prolong battery life. See the documentation supplied with your computer.
- Use a serial port that contains a 16550A Universal Asynchronous Receiver Transmitter chip (UART). Windows uses the buffering capabilities of such ports so that Windows communications applications can achieve high speeds even on slow computers. For more information, see your serial-port documentation.

  Note Using the buffering capabilities of Windows causes problems with some versions of the UART. In this case, you need to disable the buffer of the UART by using the **com*x*fifo** setting in the SYSTEM.INI file. For more information about this setting, view the SYSINI.WRI file by using Write (in the Accessories group).

Errors occur when you use non-Windows communications applications.

If you are running a non-Windows application that uses the Xon/Xoff protocol for serial-port communications, you might lose characters or receive protection violations when other running applications are

slowing down the system. If this happens, include the following setting in your SYSTEM.INI file:

COM*x*Protocol = XOFF

where *x* is the number of the COM port. For information about this setting and how to change it, view the SYSINI.WRI file by using Write (in the Accessories group).

Using Terminal

If you have trouble using Terminal and a modem to connect to a remote computer, a number of factors could be the cause. The following sections describe solutions for a few common problems.

The modem does not dial the number.

Your hardware may be connected improperly, or the incorrect COM port is specified. Use this checklist:

- Make sure the correct cables are attached to the modem and phone jack, and between the two computers.
- Make sure the proper COM port is specified in the Communications dialog box. Choose the Communications command from the Settings menu in Terminal to see how the Connector option is set.

You cannot establish a connection.

If the modem dials and you get an answer, but no connection is established, you might not have the correct settings for the remote computer. Communicating systems must use the same baud rate, although some modems can drop back to the rate of the remote modem and signal Terminal of the change. (For information about this feature, see your hardware documentation.) If you want to transfer data, both systems must also use the same settings for data bits, parity type (none, odd, even, mark, and space), stop bits, and flow control.

If you do not know what settings the remote system is using, refer to its documentation by calling the remote system's information number (not the data-transmission number). Request the information, and then set Terminal to match the remote-system settings by using the Communications command on the Settings menu.

You cannot send or receive a text file.

Communicating systems must use the same handshake (or flow-control) method.

To determine whether the systems use the same handshake method, you need to know the following information:

- What software-handshake method, if any, the remote system uses.

  The standard method is Xon/Xoff. However, another method may be used.
- Whether the remote system is using the hardware-handshake method.

  If it is, choose the Communications command from the Settings menu in Terminal, and then select the Hardware option button.

Using Windows with a Network

The following sections provide solutions for problems you might encounter when running Windows with a network. Be sure to also read the NETWORKS.WRI file; you can do so by using Write in the Accessories group.

You cannot connect to a network drive.

- If you cannot connect to a network drive or network printer from Windows, try making the network connection before starting Windows. If you cannot, it is probably not a Windows problem.
- If you cannot connect to a network, make sure you are using the correct network drivers. You can find out what network driver you are using by choosing the Windows Setup icon in the Main group.

You have trouble when running a shared copy of Windows.

- If you receive a message about sharing violations while running a shared copy of Windows or a shared copy of another application, make sure the application's file attributes are set to read-only. You can view or change a file's attributes by using the Properties command on the File menu in File Manager.
- If you have trouble running a shared copy of Windows, make sure your personal Windows directory and the shared Windows directory are both specified in your path. Your personal Windows directory must be specified first.
- Make sure you are using the same letter to designate the network drive every time you connect to that drive. For example, if you use the drive letter W when you connect to the network drive to set up a shared copy of Windows, Windows records W as the path it should use in the future to look for the shared Windows files. If the next time you connect to the same network drive you use a letter other than W, you will not be able to start Windows correctly.

  If you do need to specify a different drive letter when you connect to a network drive in order to use a shared application, be sure to change the path that Windows uses to find the application.

You have trouble with network software when running Windows.

- If you cannot run Windows or other applications while your network software is loaded into the high memory area (HMA), the first 64K of extended memory, try disabling the network software's HMA options. For more information, see the documentation provided with the network software.
- If you cannot run Windows while your network software is loaded into the upper memory area between 640K and 1 MB, try loading the network software into conventional memory. Some network software does not work when loaded into the upper memory area.
- If your system locks up when you receive a network pop-up message, you might need to either disable such messages or run a Windows application that properly displays them. For example, WinPopup is such an application and is supplied with Windows.

Using Two Versions of Windows

The following list describes solutions for problems you might encounter when you have two versions of Windows installed on your computer:

- Make sure the **path** command in your AUTOEXEC.BAT file specifies the directory that contains the version of Windows that you are currently using. Remove the directory of the older version from the **path** command before you install the newer version. You can check the dates of files by using the All File Details command on the View menu in File Manager.
- When you want to run an application, print a file, install a printer, or install a driver, make sure the current directory is the directory that contains the version of Windows that you are currently using. Windows searches the current directory for the application's files before searching other directories specified by the **path** command.
- Always use the device drivers for the version of Windows that you are currently using.
- If you want to use applications that are set up in the same directory as the earlier version of Windows (not a subdirectory of it), you probably need to set up those applications in the directory where the later version of Windows is located. In some cases, you can simply copy the files to the new directory; in other cases, you must set up the application again.
- If you set up an application in Windows version 3.0 and you want to run the application in Windows version 3.1, you need to set up the application again from version 3.1.

Before You Contact Product Support Services

If you still have difficulties with Windows and are considering contacting Microsoft Product Support Services (PSS), you should read the following guidelines.

Read the Windows text files.

During Windows Setup, several text files are copied to your hard disk. The filenames end with the .WRI extension and are placed in the directory where you set up your Windows files. The files contain information that was received too late to be printed in the *Microsoft Windows User's Guide*. They also contain information about the initialization files, SYSTEM.INI and WIN.INI. Take a look at these files before contacting Product Support Services.

▶ To open and read the README.WRI file

- In the Main group, choose the Read Me icon.

Write starts and opens the README.WRI file. This file contains information about locating and opening other Windows text files. For information about using Write, press the F1 key, or choose Contents from the Help menu.

If you chose not to install the initialization files when you set up Windows, you can run the Windows Setup program again to install them now. For more information about using the Setup program, see Chapter 1, "Setting Up Windows."

Know your system.

When you contact Product Support Services, the technician needs to know whether there is anything unique about your computer system. To help the technician, you should know the following about your system before you contact PSS:

- The contents of your CONFIG.SYS and AUTOEXEC.BAT files. (For more information about the role these files play in troubleshooting, see the following section, "Streamline the CONFIG.SYS and AUTOEXEC.BAT Files.")
- The drive and directory where Windows is installed.
- The type (brand and processor) of computer you are using (for example, Compaq 80386).

- The version and type of BIOS (basic input/output system) in your computer.
- The amount of RAM (random access memory) your computer has.
- The size of your hard disk.
- The type of display adapter you are using (for example, EGA or VGA).
- The type of mouse you are using (brand, model, and whether it is serial or bus).
- The type and layout of the keyboard you have (for example, enhanced).
- If you are running Windows on a network; and if so, the name and version number of the network software you are using.
- The printer and printer port you are using.
- The amount of memory your printer has.
- The names and version numbers of applications you are running with Windows.

It may also be helpful if you know the type of hard-disk controller in your computer.

Microsoft Diagnostics If you are uncertain about your computer configuration, you can use the Microsoft Diagnostics (MSD) program before contacting PSS. The PSS technician asks questions that you can answer with the information supplied by MSD. This program is provided with Windows. During Windows setup, this file is placed in your Windows directory.

▶ To start Microsoft Diagnostics

- Type the following at the MS-DOS prompt, and then press ENTER:

  msd

Streamline the CONFIG.SYS and AUTOEXEC.BAT files.

If you want to troubleshoot a problem yourself, it's best to start with a "minimum" Windows configuration. This means that as a test, you should try removing unused applications, memory-resident programs (TSRs), and unnecessary device drivers from your CONFIG.SYS and AUTOEXEC.BAT files. You can use a text editor, such as Notepad (in the Accessories group), to open and edit these files. When just a few applications are running with Windows, it's easier to isolate your problem.

Before you make any changes, create a system disk that includes a backup copy of both the CONFIG.SYS file and the AUTOEXEC.BAT file. You can restore these files when you are finished with the trouble-shooting tests. You also can use the floppy disk to start your system, if necessary.

You can make a system disk by starting File Manager (in the Main group), and then choosing Make System Disk from the Disk menu. Then copy your current CONFIG.SYS and AUTOEXEC.BAT files to the disk. These files are usually located in the root directory of your first hard disk drive, which is usually drive C. If you start your system by using a floppy disk, these files are located in the root directory of that disk.

When removing command lines from your CONFIG.SYS and AUTOEXEC.BAT files, make one change at a time. After making one change, test it. This will help you isolate the problem. As a general rule, if you don't know what a particular command line does in the CONFIG.SYS or AUTOEXEC.BAT file, do not remove it. If you are using disk-partitioning software, such as DMDRVR.BIN, do not re-move the command lines that specify it.

On the following page are examples of CONFIG.SYS and AUTOEXEC.BAT files at a minimum configuration.

A streamlined CONFIG.SYS file:

```
files=30
buffers=20
device=c:\windows\himem.sys
```

The **files** command sets the number of files MS-DOS can access at one time. The **buffers** command allocates memory for buffers when your system starts. The **device** command in this example sets up the HIMEM.SYS device driver.

A streamlined AUTOEXEC.BAT file:

```
prompt $p$g
path c:\;c:\windows;c:\msdos
set temp=c:\windows\temp
```

The **prompt** command determines the appearance of the command prompt. The **path** command specifies the search path for MS-DOS and Windows. (Some versions of MS-DOS might name this directory something other than \MSDOS.) The **set temp** command specifies the directory where temporary files are stored. You may need to create the specified directory if it does not exist. The directory for temporary swap files should be a location that has at least 2 MB of available disk space. For more information about temporary swap files, see Chapter 14, "Optimizing Windows," in the *Microsoft Windows User's Guide.*

If, after reading these sections, you are still having trouble with Windows, you can call PSS. Since the technicians ask questions about your computer configuration and the contents of specific files, you should be at your computer when you place the call.

Microsoft Product Support Services

Microsoft offers a variety of support options to help you get the most from your Microsoft product. The following information summarizes these options.

If you have a question about your Microsoft product, first look in the product documentation or consult online Help. If you cannot find the answer, contact Microsoft Product Support Services.

Outside the United States, contact Microsoft Product Support Services at the Microsoft subsidiary office that serves your area. For information

about Microsoft subsidiary offices, see the following section, "Product Support Worldwide." For information about additional support options, you can refer to a card enclosed in your Microsoft Windows package.

Getting Product Support in the United States

The following means of support are available in the United States. These services are provided using the English language.

- **Call the Interactive Voice Support Service**

  You can hear recorded responses to common Microsoft Windows questions and order application notes by fax. This automated service is always available and requires a touch-tone telephone. For assistance with Microsoft Windows, dial (206) 635-7245.

  You can use the following keys on your touch-tone telephone after you reach the Interactive Voice Support Service:

  - To advance to the next message, press *.
  - To repeat the current message, press **7**.
  - To return to the beginning of the Interactive Voice Support Service, press #.

- **Call Microsoft Product Support Staff**

  Call (206) 637-7098 Monday through Friday, between 6:00 A.M. and 6:00 P.M. Pacific time.

  When you call, you should be at your computer and have the Microsoft Windows documentation at hand. Be prepared to give the following information:

  - Your product's serial number. Your serial number label is on the inside back cover of this book.
  - The version numbers of Windows and MS-DOS that you are using.
  - The type of hardware you are using.
  - The exact wording of any messages that appeared on your screen.
  - What happened and what you were doing when the problem occurred.
  - How you tried to solve the problem.

  Microsoft's support services are subject to Microsoft's prices, terms, and conditions in place at the time the service is used.

Product Support Worldwide

Microsoft provides product support services throughout the world. To receive product support or for information on how to receive product support, contact the Microsoft subsidiary office that serves your country. Microsoft subsidiary offices and the countries they serve are listed in the following table.

For this country	Contact this office	Using this number
Australia	Australia	(02) 870–2131
Austria	Austria	0660/65–10
Argentina	Argentina	(54–1) 814–0356
Baltic republics	Germany	(0049) 089/3176–1110
Belgium	Belgium	02–5133274 (Dutch) 02–5023432 (English) 02–5132268 (French)
Bermuda	Venezuela	0058.2.914739
Bolivia	Argentina	(54–1) 814–0356
Brazil	Brazil	011–533–2922
Canada	Canada	1 (416) 568–3503
Caribbean countries	Venezuela	0058.2.914739
Central America	Venezuela	0058.2.914739
Chile	Argentina	(54–1) 814–0356
Commonwealth of Independent States	Germany	(0049) 089/3176–1110
Colombia	Venezuela	0058.2.914739
Denmark	Sweden	(46) (8) 752 68 50 (applications) (46) (8) 752 60 50 (systems)
Eastern Europe	Germany	(0049) 089/3176–1110
Ecuador	Venezuela	0058.2.914739
England	United Kingdom	(734) 271000
Finland	Sweden	(46) (8) 752 68 50 (applications) (46) (8) 752 60 50 (systems)

For this country	Contact this office	Using this number
France	France	(33) (1) 69–86–10–20
French Polynesia	France	(33) (1) 69–86–10–20
Germany	Germany	(0049) 089/3176–1110
Iceland	Sweden	(46) (8) 752 68 50 (applications)
		(46) (8) 752 60 50 (systems)
Italy	Italy	(39) (02) 26901363 (applications)
		(39) (02) 26901354 (SDK)
Japan	Japan	(81) (3) 3363–0160, 3363–0170
Korea	Korea	(82) (2) 563–9230
Liechtenstein	Switzerland	(0041) 1/ 342–4085 (German)
		(0041) 22/ 738 96 88 (French)
Luxembourg	Netherlands	(0031) 2503–77877 (Dutch)
		(0031) 2503–77853 (English)
Mexico	Mexico	(52) (5) 325–0912
Netherlands	Netherlands	02503–77877 (Dutch)
		02503–77853 (English)
New Zealand	Australia	(02) 870–2131
Northern Ireland	United Kingdom	(734) 271000
Norway	Norway	(47) (2) 18 35 00
Papua New Guinea	Australia	(02) 870–2131
Paraguay	Argentina	(54–1) 814–0356
Peru	Argentina	(54–1) 814–0356
Portugal	Portugal	351 1 4412205
Puerto Rico	Venezuela	0058.2.914739
Republic of Ireland	United Kingdom	(734) 271000
Scotland	United Kingdom	(734) 271000
Spain	Spain	(91) 803 99 60

For this country	Contact this office	Using this number
Sweden	Sweden	(46) (8) 752 68 50 (applications) (46) (8) 752 60 50 (systems)
Switzerland	Switzerland	1/ 342–4085 (German) (41–22) 738 96 88 (French)
Uruguay	Argentina	(54–1) 814–0356
Venezuela	Venezuela	0058.2.914739
Wales	United Kingdom	(734) 271000

Note For product-support information for countries not listed, contact the United States office at (206) 936–8661.

Microsoft® Windows™ Operating System Version 3.1 720K Disk Offer

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Your new Microsoft Windows operating system version 3.1 includes either 5.25" high-density (1.2 MB) disks or 3.5" high-density (1.44 MB) disks. If your system requires 3.5" low-density (720K) disks, please follow the instructions below, enter the appropriate information on the order coupon, and send it and one of the required items listed below to Microsoft Corporation to receive FREE 720K disks. *No photocopies or facsimiles of the order coupon will be accepted.*

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- A photocopy of your dated product receipt for Microsoft Windows version 3.1
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If you have any questions about this offer, please call Microsoft Sales and Service at (800) 426-9400 before returning this coupon. Please allow 2 to 4 weeks for delivery upon receipt of this order by Microsoft. Offer good only in the 50 United States. This coupon is not transferable.

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